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JOURNAL *of* EDUCATIONAL RESEARCH

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A SYMPOSIUM ON PARTICIPATION OF THE FIELD WORKER IN EDUCATIONAL RESEARCH

INTRODUCTION

CARTER V. GOOD
University of Cincinnati

ONE practice in the preparation of symposia is to have the participants discuss the same general topic, which means that considerable duplication is involved. The plan of the present symposium is different, in that it follows a rather definite pattern of sub-topics into which each author has fitted his contribution, although even here similar points of emphasis will be found in more than one discussion.

In the beginning, it has seemed desirable to consider the nature of research and scientific method as applied to educational problems. Quite appropriately Gray points out that the steps in problem solving or good thinking are essentially the same, and urges that each investigational step or procedure be recognized and evaluated in the light of its significance and relationship to the complete act of problem solving.

Obviously, before, or along with, consideration of field problems which require investigation and of appropriate research methods, the previous training of the worker should be given attention. Barr describes briefly certain methods commonly employed by higher institutions for the training of research workers, with a somewhat fuller account of the plan used at the University of Wisconsin. Woody reports a special type of field course, sponsored by the University of Michigan, for professional growth and for stimulating participation in scientific study of instructional problems on the part of workers who had recently been awarded advanced degrees. Alexander stresses the need for better training of educational workers in library procedure, a type of information and skill especially important in the early stages of an investigation, and, for that matter, in the entire problem-solving process. In this same connection, the reader's attention may be directed to the bibliography on the methodology of educational research, which was purposely held for one month, so as to appear

in the October number, because of its bearing on most of the problems discussed in the symposium.

While the previous training of the would-be research worker is quite apparently a fundamental matter, the direction and supervision of field research by a competent expert seem of probably equal importance. Coxe shows how research bureaus, especially those in state departments of education, may encourage and guide appropriate problem solving among field workers. Charters analyzes the possible contribution and service of the higher institution in training for and in directing field research.

Having considered the characteristics of problem-solving procedure in education, the training of the worker, and the supervision and direction of field research, there remain for analysis the important areas and problems which should be studied, and the appropriate investigational methods to be used. Leonard presents a factual survey of the extent to which teachers have participated in state-wide curriculum programs, and suggests the values which may accrue to school system and to teacher from such activity. Loomis defines the general field of curriculum research and discusses the investigational methods to be used. Douglass analyzes the possibilities for investigation of instructional problems, with especial emphasis on the curriculum, methods of teaching, and measurement of results.

With respect to research methods which may be most appropriately applied to field problems, the major procedures are here represented. Sears discusses the survey method, with particular reference to the school survey, in relation to the training and stimulation of field workers. Brownell is frankly critical of the procedures employed and the results reported in much of the so-called pseudo-research of late years, showing fallacies due to over-emphasis on objectivity and controlled-group experimentation. Douglass, likewise, in the previously mentioned discussion of instructional problems, points out the limitations of certain research methods, in particular survey and experimental procedures. H. G. Good analyzes procedures essential to sound historical research, and suggests problems which should be investigated by this method. Loomis, also, in his discussion of the curriculum, shows how historical and experimental methods of investigation may be applied to this area.

No further attempt will be made, and space is not available, to summarize this symposium, except as additional comment is made in the editorial columns of this issue, since the various discussions represent component parts of a reasonably well-rounded and unified whole, rather than greatly overlapping treatments of the same topic.

A Neglected Phase of Educational Research

J. Stanley Gray
University of Pittsburgh

A casual survey of the literature in education gives one the impression that educational research is usually interpreted to mean the process of collecting data by survey or by experiment. Does this mean that the interpretation of data, though important, is not to be classified as research? Are advanced degrees to be granted only for fact finding? The writer recently heard two prominent educators discussing whether or not John Dewey had ever done any research in education. It would seem entirely appropriate, therefore, to raise the question again: What is educational research?[1]

In solving this problem (which does not seem to lend itself to the use of survey or experimental procedure), the writer will attempt to establish the thesis that educational progress is accomplished by the process of solving educational problems; and that the steps of educational research are fundamentally identical with the steps of problem solving. There is no significant difference between the complete act of thought, as analyzed by Dewey,[2] and the complete act of educational research. The criterion of research is whether or not some contribution is made to one or more of the solution steps in any problem significant in educational progress. An analysis of the steps of problem solving will make this thesis more evident.[3]

1. *The problem.*—Dewey says there can be no thinking without a "felt difficulty." The individual must face a situation for which he has no adequate ready response. Thinking cannot take place without cause. A problem constitutes the prerequisite for thinking. (Of course, the mere presence of a problem does not guarantee *ipso facto* that thinking behavior will be performed.)

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[1] The writer is not unaware of the pages of discussion which have already been devoted to this problem. However, he is unable to find a discussion which unifies and justifies all types of research and recognizes their respective places in the common problem of educational progress. In fact, the interpretation of research data is not even recognized as research in most classifications. (See *Journal of Educational Research*, May, June, 1931.)

[2] Dewey, John. *How We Think* (revised) (Boston: D. C. Heath and Co., 1933), Chapter 7.

[3] The following analysis is after that of Dewey, although more objective terminology has been employed. The writer understands thinking to be a type of language function, in which the individual attempts to describe causal sequences. This point of view is well presented by Weiss, A. P. *Theoretical Basis of Human Behavior*, Adams, 1925, Ch. 15.

In educational research, there must always be a problem. The process of discovering and defining problems (i.e., of isolating them by language description) may involve elaborate and detailed research procedure. For example, it may be quite obvious that teachers are not adequately trained in a certain teachers' college, but to find the specific problems which constitute this more evident difficulty may require considerable research and investigation. The school survey is usually for the purpose of revealing specific problems within an educational system. A check is made of the various phases of the educational process to discover inadequacies or "felt difficulties."

The individual who isolates and carefully describes the unsolved problems within a given area of educational endeavor has really done educational research and should receive credit for the same. While he has performed only one step of the complete act of research, it is an essential step and, if credibly done, promotes the progress of education.[4]

2. *The data.*—Problems can be isolated and described, but they cannot be understood adequately enough for solution until data have been collected concerning them. This is an important step in reflective thinking and educational research alike. It performs a dichotomous function: the problem is more adequately described (step 1), and solutions are suggested (step 3). It rounds out the preceding step and leads into the next one. In naïve thinking and careless research, this step is often incompletely performed. Time is thus lost in testing out hypotheses which would be immediately discarded if adequate information were secured about the problem. Careful research technique demands that this step be adequately performed before subsequent steps are attempted. Little can be accomplished in solution-procedure until thorough knowledge is gained about the problem. In educational research, the process of collecting data may consist of library work, of further survey, of experimental investigation, of questionnaire study, etc. In fact, an entire piece of research may be, and often is, limited to the collection of data on a particular problem or group of problems.

[4] It should be noted that in the performance of any one of the steps in the complete act of research, incidental problems may arise which involve *all* the steps of the complete act in their solution. For example, in making a school survey (which may be to reveal problems or to amass data concerning problems), the minor problem of selecting what tests to use arises. To solve this problem, data are collected, hypotheses are formed, evaluations are made both subjectively and objectively, and implications are developed as the battery of tests is chosen. A minor problem is thus completely solved in the process of performing a single step in the solution of a major problem.

It should be emphasized, however, that the collection of data usually constitutes only *one* step in the complete act of research. Educational research in America now seems to be at this stage of development. We collect facts without knowing why. We consider that the job is finished when we accumulate a mass of information. Unquestionably, very excellent work is being done at this level, but it should be considered as only one step in the complete act of research. Problems of educational progress are not often solved by the mere process of collecting information about them.[5]

3. *The hypothesis.*—This is quite definitely a theoretical (language description) step in research and thinking procedure. After the problem is defined and the data secured, the next step is to formulate or describe the most probable solution (which may already have been suggested by the data). It is essentially a plan of how to proceed further. It is a language statement of the conditions which will probably constitute the solution. No complete act of research can be performed without this step. Whether the laboratory technician approves of "arm chair procedure" or not, he cannot complete his research without it. He must temporarily become a theorist.

Experience in educational research indicates that the hypothesis should be stated very carefully. It should be detailed and specific. Only by so doing, can the next step be performed adequately.

4. *The evaluation.*—This step is closely associated with the last one and is likewise theoretical. After the hypothesis has been stated, it must then be evaluated in terms of the data already secured. The suggested solution must then be applied to the problem situation by language description (sometimes called imagination) and a prediction made as to how it will work.[6] This is an attempt to "foresee" how successful the hypothesis will be when actually tried out. It is a vicarious test of the hypothesis.

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[5] So-called minor problems sometimes are apparently solved by the collecting-data method. For example, the problem of whether or not the children in X school system are up to the nation's norm in algebra can be solved by administering standardized tests. However, this is only the first step of the more inclusive and significant problem of how those children can be taught algebra more effectively. The testing research has merely revealed whether or not a problem exists. The solution of problems of educational progress involves not one step, but *all* steps of the complete act of research.

[6] The word "prediction" is here used in a purely objective sense. See Gray, J. Stanley, "A Behavioristic Interpretation of Intelligence," *Psychological Review* (May, 1932), pp. 271-78.

It is obvious that if the suggested solution will not solve the problem, it is then necessary to return to the third step and formulate a new hypothesis. Thus there may be a long interval of time devoted to these two steps after the data are collected and before any tests are made. It is a sort of language trial and error procedure. Time spent in the careful formulation of possible hypotheses and their critical evaluation will prevent much greater delay and more costly errors at later stages of the research procedure. If the scientist performs his "arm chair" steps adequately, the function of his laboratory procedure will be clearer and more easily performed.

Now, what about the work of those who take the problems which others have discovered, the data which others have collected, the hypotheses which others have formulated, and then confine their own activity to the evaluation of these hypotheses? Can this properly be designated as research? Evidently it is as much a part of the complete act of research as any of the other steps. It necessitates no less ability, no less training, and no less knowledge to evaluate a hypothesis on the language level than it does to test it later on in a laboratory. Investigation carried on at this "arm chair" stage of research is no less research than that carried on at any other stage. However, entirely too much theoretical evaluation is done without adequate knowledge and understanding of the other steps of the complete act of research. Obviously, it is impossible to evaluate properly an hypothesis without understanding all the available data concerning the problem. The criticism of inadequate theorizing is completely justified. Like any of the other steps improperly performed, it should not be designated as research.

5. *The objective test.*[1]—When an hypothesis has been formulated which stands the critical evaluation of a language comparison with the available data, the next step is to test it out objectively. If human predictive ability were infallible, this step would be unnecessary. However, because our thinking is subject to error, it is essential that a more reliable evaluation be made. In a sense, this is a continuation of step 4. The hypothesis is being further evaluated. However, step 4 consists entirely of language behavior (thinking) and is therefore subjective, while step 5 is an *objective* evaluation. In one case there is an actual test, while in the other there is only an imagined test. Step 4 is theoretical. Step 5 is

[1] The term "objective test" is here used in a broader sense than in the general educational literature. It refers to any objective method of checking on the truth or falsity of a hypothetical solution.

objective and verifiable procedure. In another sense this step is a continuation of the data collecting process of step 2. Certainly new data are collected. Step 2, however, is a pre-hypothesis step and is necessarily general and preliminary. Its procedure is directed by the problem. It is a search for a solution. Step 5 is directed by the hypothesis and is definite and specific. It is a search for the *proof* of a solution.

Objective analysis indicates that this step constitutes the distinguishing difference between philosophy and science. The scientist objectively tests his hypotheses while the philosopher does not. Otherwise, philosophical thinking and scientific thinking cannot be distinguished. All the other steps in the complete act of thinking are identical for both philosophy and science. While it is true that the typical scientist usually limits his thinking to problems which can be tested and the typical philosopher feels no such restraint, the behavior of accurate thinking is no different in the field of philosophy than in the field of science. Philosophy is objectively defined as the language description of causal relationships which *may* exist between sensory data, while science is the objective technique of testing the accuracy of these descriptions. Philosophy is therefore interwoven with science, and the present writer can discern no value in debating their respective merits. The philosopher who tests his conclusions becomes a scientist, and the scientist who does not test his conclusions is a philosopher.

The methods of testing vary, of course, with the type of problem. Calibrated instruments may be used for observation *in situ*, laboratory situations may be devised to control variables, surveys may be conducted, statistical analysis may be employed, historical investigations may be made, etc. The adequacy of objective tests for evaluating hypotheses in education is obviously much inferior to that in the more basic sciences. It is more difficult to control the variables. However, a part of research training for this step is to learn the better methods of testing and their limitations. Educational research is in dire need of more objective and more adequate methods of testing our great mass of unproven theories.

Steps 3, 4 and 5 constitute a trial and error procedure which may be repeated many times in the process of solving a problem. An hypothesis is first evaluated by subjective procedure (step 4) and if it survives this test, it is next subjected to objective evaluation (step 5). If these evaluations indicate that the hypothesis does not constitute the solution, the procedure must be performed all over again with a new hypothesis. It may even be necessary to go back to step 2 and collect more data concern-

ing the problem. But note that these trial and error processes constitute research even though the solution is not found. Those who discover what will *not* solve a problem have contributed to its solution. Such evidence becomes data then for subsequent attempts.

6. *The conclusion.*—A very essential step in both problem solving and educational research is the process of drawing conclusions and formulating or substantiating generalizations.[8] The problem has now been solved but it has not yet been interpreted. Its meaning has not yet been explained. To do this, necessitates analysis and familiarity with the whole field of education. It necessitates as much ability, as much time, and as much language reaction (thinking) as does any of the other steps in the complete act of research.

The conclusion may be merely the further substantiation of a generalization which has long ago been stated. In that case, the investigation is just additional proof of what is already inadequately known. If the research is in a new field, the conclusion may even be suspended until further investigation permits the formulation of a more intelligent generalization. However, if the individual has the ability and devotes sufficient time to this step, he will usually be able to state a tentative generalization (which may stimulate further research) or revise an old one. Educational research is too often left dangling. It is not tied in with other investigation. If someone else does not analyze and classify it, such research is lost as far as educational progress is concerned. The usefulness and significance of an investigation are certainly of sufficient importance to justify more attention than they sometimes receive. Of what value is research unless someone explains its meaning and interprets it in the light of other phases of educational progress? Research is not completed until it is interpreted and classified.

The research activities of some individuals are wisely limited to this step of the complete act of research. It is at this level where Dewey has made his outstanding contribution. Others have likewise taken research findings (which were originally released as meaningless facts) and interpreted them for further use. Some of our educational thinkers have even gone into other fields (sociology, psychology, physiology, biology, etc.) for research findings which could be interpreted and made contributive

[8] The writer understands a generalization to be a language description of the common characteristic or characteristics of a classification. For example, "Mammalary animal reproduction takes place within the body of a female," is a generalization which describes a common characteristic of a classification of organisms. To generalize is to describe an element which is identical in all members of a classification.

to educational progress. They have thus formulated generalizations which have widely affected educational procedure.

However, this step of educational research has been greatly neglected when we consider the vast number of meaningless facts which are constantly pouring out from our research laboratories. Perhaps we do not need more interpreters of educational research, but certainly we need more who have interpretative ability and are sufficiently familiar with research data to enable them to generalize intelligently. There is no value in making generalizations which are inconsistent with part of the available data. Research results must be interpreted, but by those who are acquainted with all the data. Educational interpreters must be trained and qualified for their work if they are to perform real research.

With this hasty review of the various steps in the complete act of research,[2] it now becomes evident (1) that there are many types of research, (2) that they may not all be performed by the same individual or even in the same institution, and (3) that since they are all essential in educational progress, one cannot properly be designated as more essential than another. A well balanced research program includes all of these steps as part of a coördinated whole. Those individuals who have greater ability and more interest in one or more types of research may profitably limit their activities accordingly, but their results must then be unified with the results of other specialists if educational problems are to be completely solved.

Without question, educators have over-emphasized those predominantly manual steps of the complete act of research (data collecting and objective testing) and have neglected those predominantly thinking steps (formulating and evaluating hypotheses and interpreting data). As a result, much research has been foolishly performed and many data yet remain in a meaningless and therefore useless state. We have been careful in our training of data collectors and negligent in our training of educational thinkers. We have ignored the fact that educational progress can result only from the adequate performance of *all* the steps in the complete act of research. We have tried to make education a pure science instead of the applied science which it is. The reason is not hard to find. Edu-

[2] Obviously, the solution of *all* educational problems will not follow the sequence of steps as here outlined. Perhaps some steps may be partly omitted and others combined in the solution of peculiar problems. The above analysis is of the typical problem. It is the procedure *usually* followed when educational problems are solved and interpreted for use in educational progress.

cators are so over-zealous to become "scientific" and objective that they have ignored the fact that there is no less need for thinking in science than in philosophy. When research procedure neglects theoretical evaluation and interpretation, it is only partly scientific.

Educational progress cannot take place when educational problems are only partly solved. We must have balanced and integrated research programs if we are to achieve optimum educational progress.

The Training of Research Workers*

A. S. Barr
University of Wisconsin

Miss Helen Walker[1] in a paper on "Problems in the Training of Research Workers" read before the 1932 meeting of this association, after tracing the rapid development of research in education, emphasized the three following facts: (1) There are many persons engaged in research who for one reason or another should not be engaged in research; (2) the time has come when we should be more critical of research techniques; and (3) the chief challenge to research teachers is not to produce good computers but to improve the logic which goes into research. I should like to accept these three suggestions as a point of departure in my own discussion and continue by calling attention to certain problems of curriculum and methods in the training of research workers.

Turning first to certain problems of curriculum construction, while research teachers have a general notion of the field to be covered, I suspect that some systematic study of the kinds of research performed by research workers is needed. If the activity or job-analysis approach is employed in making such an investigation, we should expect ultimately some sort of a classified list of research problems (past, present, and future), the kinds of jobs or types of research activities to be performed, and the abilities, knowledges, skills, attitudes, and ideals necessary for the successful performance of these activities. I believe that research teachers need this information. In general, it has always seemed to me that professors of education were much more willing to apply the theories and practices of education to others than to their own activities. I believe

*Paper read before the February, 1934, meeting of the American Educational Research Association at Cleveland.

[1] Walker, Helen M. "Problems in the Training of Research Workers," *Journal of Educational Research*, XXVI (February, 1933), pp. 442-448.

that the techniques of curriculum construction should be applied in the training of research workers.

In this connection I would like to remind workers in this field that there are both producers and consumers of research. I have been particularly interested in the ordinary worker and consumer of research. While there is no field of human endeavor more in need of trained experts than the field of education, it has always seemed to me that a great service might be rendered the profession by some sort of a program meant to raise the general level of technical understanding of the ordinary worker. I do not have in mind formal classroom investigations, however desirable these may be, but informal scientific thinking about the everyday problems of teaching, supervision, and administration. I think the point that I have in mind can best be illustrated by reference to the field of measurement. The earlier emphasis in this field was upon standardized tests and measuring devices; more recently the emphasis has shifted to informal tests and measuring instruments and the education of teachers to construct their own measuring devices. Something of the same sort appears desirable in the field of scientific thinking.

Turning now to certain problems of method in the training of research workers, I should like to call attention to the fact that there are three methods commonly employed in training research workers: (1) the seminar; (2) courses in the methodology of educational research; and (3) individual research. I suppose, that to get any sort of a basis for judging the relative merits of these three methods of training research workers, one should recall the three fundamental modes of learning to which reference is so frequently made, namely, observation, doing, and verbal communication. As we all know, there is much difference of opinion among educationalists as to the relative merits of these three fundamental modes of learning. In secondary school science there is, for example, a movement to supplant the traditional laboratory, where one learns by doing, with class demonstration and visual aids. I rather doubt that this method is particularly applicable to the training of research workers in education except in those instances in which elaborate equipment is involved. The seminar, as I understand it, purports to train research workers primarily by summarizing the researches of others relating to selected problems. This, I think, can be taken as a kind of indirect observation. Then, too, I believe that some seminars provide students with opportunities to do individual research under direction as do research courses. This I understand to be learning by doing. The regularly constituted courses in the

methodology of research, insofar as I have come in contact with them, appear to employ largely verbal methods of instruction. Without attempting to criticize current practice, I should like to report briefly upon a method of teaching employed in an introductory course in the methodology of educational research offered at the University of Wisconsin in which some attempt is made to employ these three fundamental modes of learning in the training of research workers. The course is built around learning-by-doing in which the student is engaged in actual research with his attention definitely directed toward research methods. After two or three introductory discussions of the methodology of educational research the class chooses a group project. If time permits, each individual may do likewise. The choice of the problem is made by the class as a whole and is accompanied by a discussion of some of the characteristics of fundamental research. Some effort is exerted toward choosing a problem of fundamental importance. Having chosen a problem, the class then proceeds to review previous investigations with the purpose of further defining the problem, developing a procedure, choosing or constructing data-gathering devices, making the necessary analyses, and drawing definable conclusions. Each previous investigation is made the object of a rigorous class exercise in analysis. Following the study of previous investigations the class then develops, under direction, its own procedure for studying the problem chosen for investigation, collects is own data, makes the necessary analyses, and prepares a formal report. A point is made throughout the discussion that the project chosen for investigation is not a play project, but a work project to be judged by the standards employed in evaluating the products of other research workers. The class discussion of each phase of the work as it develops is supplemented by a considerable amount of definitely assigned reading undertaken to answer specific questions arising from an attempt to do actual research. While I am not in a position to report experimental evidence as to the effectiveness of this procedure, it appears, on the whole, to be relatively effective.

The course here described is the fourth unit of a four-unit introduction to the problems and methods of educational research required of all graduate students in education in the first year of their graduate work at the University of Wisconsin. The four units, enumerated in the order in which they are offered, are: (1) problems; (2) statistics; (3) measurement; and (4) the methodology of educational research. Offered in this fashion, it is hoped that this course may be of value to both the producers and consumers of research. By the nature of the course its content

is limited to the more general and elementary aspects of research; it in no manner supersedes the traditional seminars in education taught by individuals who are specialists in the techniques of research peculiar to their several fields of specialization; these more advanced and specialized treatments of research appear particularly desirable for the training of producers of research.

In thinking about the training of research workers, it seems perfectly clear to me that there are great individual differences in the products of research teachers and institutions. This is due partly to the selection of students, to differences in standards, to differences in objectives, and to differences in methods of training. Some institutions and individual research teachers, notwithstanding a multitude of conditioning factors, are known to turn out students who have acquired the scientific attitude and who do engage in quality research, and some do not. I believe that this observation is a common one well founded in the facts of contemporary education. In the light of these differences in the training products of institutions and individual research teachers, I believe that steps should be taken to evaluate and improve the training products of research teachers and institutions. If such an evaluation is undertaken, I think it should be remembered, however, that not all students of research are research specialists; some prefer to apply the techniques of research to their own everyday problems of teaching, supervision, and administration.

Stimulating Instructional Research in Michigan Schools

Clifford Woody
University of Michigan

Three hundred sixty-three superintendents of schools, principals, and supervisors in the state of Michigan were actively engaged during the 1934-35 school year in the intensive study of some instructional problem. The impetus to this intensive study was a new type of field course inaugurated and conducted by selected members of the staff of the School of Education of the University of Michigan.

Nature of the Course

This new course represented an effort of the School of Education to cooperate with the educational leaders of the state in studying certain of the problems which confronted them. The course, intended for *in-service*

training, was designed to appeal primarily to those administrative and supervisory officials having advanced degrees from the University of Michigan or other similar institutions of higher learning, although individuals serving in administrative or supervisory capacities, who were graduates of standard colleges and universities but who had not received advanced degrees, were admitted. In one way the course represented an effort of the School of Education to re-new contacts with the school men and women of the state who in years past had taken advanced degrees, to confer with them concerning recent contributions of research, and to promote and coöperate in the scientific study of selected problems.

SELECTION OF THE PROBLEMS FOR STUDY

The selection of the problems for study, as intimated in the previous section, was a coöperative enterprise. The Dean of the School of Education first canvassed his staff concerning its idea of the problems which should be studied and concerning its willingness to participate in directing given investigations. He then submitted the list of problems thus secured to representative field workers with the request that they check the ones which seemed most desirable. They were urged to submit any other problems which appeared more challenging and in more urgent need of solution than those listed. The staff of the School of Education, in the light of the response by the field workers, made the final decision on the problems to be studied. This method of selection was vital to the success of the venture, for it guaranteed that the topics to be considered dealt with problems upon which the field workers desired expert assistance and that the instructors were willing to render the service desired.

THE UNITS OF INSTRUCTION

Four problems seemed to be outstanding in the responses of the field workers: low achievement in reading, conduct problems of pupils, teaching of dull normal pupils, and extra-curricular activities. On the basis of these problems, mimeographed monographs of instruction were prepared on the following topics by the staff members whose names appear in parentheses after each title.

Unit I. The Improvement of Reading in the Elementary and Secondary Schools (Woody and Keeler).
Unit II. The Diagnosis of Behavior Problems (Trow and Olson).
Unit III. The Technique of Instruction for Slow Normal Pupils (Schorling and Curtis).
Unit IV. The Appraisal and Redirection of Extra-Curricular Activities (Davis and Johnston).

The instructors coöperated in planning the units. They developed a common outline and kept constantly in mind that the key note of the four units was *adapting instruction to the needs of the pupils*. Every effort was made to have unity in the development of the monographs. In each monograph, attempts were made to set forth the philosophy underlying the proper treatment of the problem involved, a summary of recent trends, review of methods and techniques employed in studying the problem, briefs of recent pertinent investigations, and detailed assignments in which methods of studying different aspects of the problems were presented. It may be said that the discussion of the philosophy, techniques, and of pertinent research was simply preparing the seed-bed for the research projects outlined in the assignment.

MONOGRAPH ON THE IMPROVEMENT OF READING

A brief description of the contents of one of the monographs will be presented, in order to illustrate how the stage was set for training and participation in study and research on various aspects of the problem of the improvement of instruction in reading in the elementary and secondary school. The writer's greater familiarity with this unit, since it was prepared and taught by L. W. Keeler and himself, is the only excuse for describing this monograph rather than one of the other units.

The monograph in reading, a ninety-seven page document, consisted of the following eight chapters and an extensive appendix:

I. Aims in Reading and Activities for Realizing Them.
II. Modern Trends in the Teaching of Reading.
III. Diagnostic and Remedial Instruction in Reading.
IV. Reading Readiness.
V. Assignments and Research Projects.
VI. Briefs of Selected Articles.
VII. Selected Reading Tests.
VIII. Selected Bibliography.
Appendix

The contents of the different chapters all pointed to the improvement of instruction and paved the way for the research projects suggested in the assignment. The first two chapters dealt with the current philosophy and theory underlying the teaching of reading, on the assumption that any superintendent, principal, or supervisor intent on a program of improvement in the teaching of reading must have a definite and clean-cut conception of the values which should be emphasized in a modern program of instruction in the subject. The writers of the monograph emphatically stressed the point that any efforts at diagnostic and remedial

instruction must be made in the light of accepted current trends in the teaching of reading, and presented specific criteria by which the programs of instruction in any unit could be inventoried and evaluated.

Chapter III, with its emphasis on the fact that diagnostic and remedial instruction is merely *good instruction*, sets forth how the physical, mental, social, educational, and emotional equipment of the child, the general nature of the subject matter to be taught, and the nature of the method of teaching employed may interfere with successful achievement in reading; and presents for a given pupil a detailed program of remedial instruction, based upon the results obtained from the application of the blank reproduced in the appendix for making a case study of a pupil having difficulty in reading. The need for an intensive study of the learner in terms of psychological principles and modern trends was vividly portrayed.

Chapter IV, representing an attempt to capitalize on both the interest of the field workers and of the writer in the problem of reading readiness, sets the stage for investigations of this aspect of the subject by discussion of the following topics: the assumptions underlying learning, one of which is the concept of readiness for learning, mental factors constituting reading readiness on the part of the child, the reading capital of a six year old child, tests for determining reading readiness and an analysis of all the abilities stressed in them, and opportunities for investigation of the readiness phase of the reading problem. The authors took special pains to stress this last topic, since the writer had prepared in temporary form various types of reading readiness tests and was anxious to secure cooperation in trying out his tests.

These first four chapters, as should be clear to the reader, were merely preparatory to Chapter V, in which the assignments for the course were made. Since but limited library facilities were available and since the instructors had only a single four-hour period in which to set up the research projects, the assignments of the investigations to be undertaken had to be very definite and detailed. Since the nature of the assignment plays such a vital part in promoting an understanding of the training given and of the participation in the research undertaken, selected pages from the monograph are quoted.

Assignments

I. General Assignment

(a) Each individual taking this unit must prepare a short assignment. The nature and length of the assignment must be condi-

tioned by the size of the school under consideration and the amount of work involved. Some typical assignments are outlined.

(1) Case study reports in which the administrative or supervisory officer analyzes and synthesizes the case study of a pair of poor and good readers made by each teacher in the building. The administrator or supervisor is to direct the teachers in their making of the case studies. The outline for the diagnosis of difficulties in reading and the reading study inventory may be used with a battery of mental and reading tests.

(2) Testing program in which reading readiness test is given to a class in the primary grades and a comparison of the results made with achievement in reading or with scores on standardized tests.

(3) Collection, summarization, and interpretation of facts for one building concerning reading practices.

(4) Collection, summarization, and interpretation of facts from teachers and pupils concerning the use of books and libraries.

(5) Collection and analysis of the devices used by teachers for remedial instruction in reading.

(6) Application of the *Inquiry on Reading Creed* to the teachers in the various grades in a school system. To have value the tests should be given to approximately twenty teachers in each grade. A medium-sized city will have sufficient teachers, but several of the smaller cities may well combine to get significant results. The report should contain the tabulated data and show how the results were used for the improvement of instruction in the units under consideration.

(7) The use of the score card for rhythm in the primary grades in connection with other measures of achievement in reading will make a very satisfactory report. In the report should be a discussion of the value of the score card, suggestion for its use and for its improvement.

(8) Case studies showing an account of the diagnosis and modification of instruction in reading to meet the needs of children with defective vision, hearing or speech. Those choosing this report should select pupils attending the public schools, not those attending special schools or special classes.

Term Report

A term report dealing with some aspect of the materials covered by one of the four units is required of each student. This term report is in addition to the report to be made by all on each of the four units. However, so far as the unit on *Improvement*

of Reading is concerned, those preferring to elaborate the topic of the general assignment may do so. A few suggestions of topics suitable for term reports are listed below.

1. The extension of any of the topics mentioned under the general assignment. When such a topic is chosen it must include more pupils and more tests or more buildings.
2. The administration of a battery of reading tests to at least three classes and presentation of the tabulated and interpreted results with an account of your efforts to use the results of the tests for the improvement of instruction in reading.
3. Complete summarization of the data on reading practices obtained in a medium sized school system or its equivalent. In a large system the work may be divided into distinct parts: one may summarize and interpret the data on subject-matter, one the data on methods or on such divisions as are agreed upon. While a number of individuals would be working on a general term report, each will have his specific assignment. A number of individuals from the smaller cities may agree to give the inquiry form and similarly divide the task of preparing the final report.
4. The administering of reading readiness tests to a number of pupils in the various grades and determining the relationship of success on the tests as to quality of achievement in reading, intelligence, or other similar ratings. In addition to the reading readiness tests listed in this bulletin the instructors for this unit are very much interested in standardizing another type of reading readiness test. Woody and students in his seminar in elementary education have been working on it for a year or so. It is an individual test and requires approximately 20 minutes per pupil for administration. The giving of this new reading readiness test along with other measures of reading readiness or achievement will make the basis for a satisfactory term report. Your coöperation in administering this new test is solicited even though you may not desire to use the results for your term report. If each one taking this course can ask each teacher in the primary grades to administer the test to six pupils, the Bureau can determine the worth of the proposed test. The administration of this test to the pupils in three grades and a tabulation and summarization of the results, reactions, and interpretations will make an excellent report.
5. The collection, analysis, or preparation of various types of remedial exercises designed to overcome specific kinds of difficulties. This may involve collecting data on remedial practices in your own school system, getting illustrations for each grade, or collecting from courses of study or books. In

the large city plenty of material will be available. Several of the smaller cities may arrange to coöperate, and exchange materials on this topic for data on some other. New types, if sufficient in kind and number, created by some budding genius will be satisfactory.

It will be noted from the nature of the suggested topics for assignment that all centered in the type of activities in which the superintendent, principal, or supervisor should be engaged in the efficient prosecution of his work. To paraphrase a popular objective of education, it may be said that the purpose of this assignment was to help these school people to do better what they ordinarily do.

The remaining chapters and the appendix of the monograph were designed as aids in the prosecution of the investigations undertaken. Chapter VI presents briefs of several recent investigations dealing with various phases of the problems under consideration. The briefs showed pertinent facts and illustrated the type of control which should prevail in well conducted investigations. In Chapter VII, the authors listed information concerning the type of tests which they hoped might be used for investigations involving measurement of general achievement in reading, diagnosis of difficulties in reading, and the determination of reading readiness. Chapter VIII constituted a selected bibliography classified under the following heads: general references on the improvement of reading, diagnosis of difficulties in reading, reading readiness, improvement of reading in junior and senior high schools, and the extent of reading.

The appendix proved to be the cap stone of the monograph in stimulating research activities. It consisted of seven different exhibits which could be used in making investigations. Exhibit I was a suggested score card for indicating the amount of rhythm in activities involving running, walking, dancing, talking, singing, and reading. Exhibit II, containing forty-nine statements concerning the teaching of primary reading, exhibited under the caption, *My Creed Concerning Reading Practices*, offered opportunity for checking three responses: YES, NO, DOUBTFUL. Exhibit III, an interview blank for making a case study of a pupil having difficulty in reading, called for the collection of facts concerning health and physical status and the sociological and economic status, mental capacities, records of school achievement, history of reading accomplishments with teachers' comments, and pupil's attitude toward his reading accomplishments. Exhibit IV was an interview blank designed for ascertaining the nature of the habits employed during the process of reading.

Exhibit V was a series of questions for collecting information concerning the instruction which teachers in the various groups give, and should give, in the use of books, periodicals, and libraries. Exhibit VI was an inquiry form designed to gather information concerning time allotments, basal and supplementary texts, the amount of material read, the aims and objectives underlying the teaching of reading, devices used in remedial reading, standard tests used, and other factors for overcoming difficulties. The last exhibit consisted of classified illustrative remedial exercises designed for overcoming the following types of difficulties: word analysis, inadequate vocabulary, limited understanding of the meaning of words, inability to comprehend total meaning of a sentence or paragraph, poor achievement in grasping general meaning or central thought in a paragraph or group of paragraphs, and low capacity for reproducing the contents of material read.

This brief but seemingly rather detailed review of the monograph proved most effective in setting the stage for active participation in the scientific study of various problems dealing with the improvement of the teaching of reading. While the material in the assignments and in the exhibits was submitted as being merely suggestive, and opportunities were offered for modification and variations, the members taking the course grasped at once for the clearly defined problems and techniques. The material of the monograph was printed in such fashion that they recognized the significance of the suggested problems and saw the value of making application of various tests or exhibits in attempting to throw light on the solution of the problems. It might be objected that the clear definition of the problems and the preparation of the instruments to be employed in their solution robbed the members of the class of most valuable training, but it must be remembered that the four-hour period at the beginning of the school year in which the instructors met the class offered but a limited time for planning the various investigations and that correspondence concerning the conduct of an investigation is quite unsatisfactory. Furthermore, it should be added that both the instructors and the members of the class were interested in the analysis and interpretation of the results obtained rather than in the development of instruments which could be used in the desired research.

THE CONDUCT OF THE COURSE

A thorough understanding of how the course stimulated participation in research activities necessitates a few statements concerning its manage-

ment. This course was an off-campus one given in ten strategically located centers of the state, with eight centers in the lower peninsula and two centers in the upper. A spot map showing the school systems represented in the personnel of the membership attending the various centers indicates that every section of the state and almost every important school system was represented. All of the four units were presented in each of the centers although the same instructors did not appear for all the units, nor were the units given in the same order. Each instructor met each of the centers to which he was assigned for two four-hour periods: one in the fall when the monographs were presented and the research activities were initiated; one in the spring at which time the results of the investigations were presented and discussed.

In the interim between the two meetings, instructors responsible for the direction of projects kept in touch with their development through correspondence and circular letters. Since each group was in session for thirty-two hours during the school year, two hours of credit in the Extension Department could be obtained if desired. However, credit was of minor consideration to the group since many did not elect the course for credit and those who did gave it little concern and spent many hours on the project undertaken. Each worker was using his own school as a laboratory and was studying problems of significance to him and his system. Often he selected an investigation which would necessitate participation of every teacher in his whole school system.

THE EVALUATION OF THE COURSE

While it is difficult to evaluate the results accruing from this effort to stimulate continuation of professional study and participation in research activities, five types of evidence will be submitted: class attendance, reports submitted, group evaluation of the course, testimonial of directors of research in two large schools, and a description of the use made of the course in a city of 10,000 population. A single type of evidence may not be impressive, but the total picture should give some indication of the value of the venture.

The attendance of the 361 members was almost perfect, although many of the members were not seeking credit, and in spite of the fact that many of them had to drive fifty or sixty miles. An illustration of the attendance at one of the centers under the direction of the writer is typical. Of the sixty members present at the fall meeting, fifty-nine were present at the spring meeting, although twenty-five members were attending the

course on a non-credit basis. The fact that the attendance was almost perfect attests to the interest in and value of the investigations undertaken.

Table I, exhibiting a summary of the reports submitted, reveals that at least 173 of the 361 members electing the course submitted both major and minor reports. A few others may have submitted reports after these

TABLE I

NUMBER OF MAJOR AND MINOR REPORTS

Unit	Major	Minor	Total
I. Reading	67	20	87
II. Dull Normal Pupils	23	36	59
III. Conduct Problems	34	60	94
IV. Extra-Curricular Activities	49	57	106
Total	173	173	346

tabulations were made, but most of the students not represented were taking the course on a non-credit basis. They may have undertaken and completed investigations but, since they were taking the work on a non-credit basis, did not file reports. The scope and quality of the reports were the equivalent of masters' theses, although many were of lesser importance. However, the simple fact that these 173 members submitted both a major and a minor report suggests important and perhaps unrevealed growth and development in the scientific solution of educational problems among the school people of the state.

The responses of the members of the classes to an inquiry, sent by the Dean of the School of Education, concerning the offering of a similar course in the 1935-36 school year, were overwhelmingly in favor of it. While the writer does not have access to the complete tabulations, 174 of the 190 unsigned replies received, urged the giving of a similar course and a great majority of the members stated that they would attend another such course. Since the collection of these data, numerous petitions for establishing new centers have been received.

The directors of research in two large school systems, in which most of the principals had enrolled, stated that never in the history of their bureaus had there been so many requests for aid in connection with experimental procedures for dealing with the various problems of instruction. These directors reported that increased professional zeal among the staff members was manifesting itself through many self-initiated investigations in the various buildings.

Probably the best evidence of the value of the course in stimulating scientific study of the problems of instruction can be given by reciting the nature of the activities engaged in by the superintendent, supervisor, and principals in a city of approximately 10,000 inhabitants. The activity represented in this city is fairly typical of work undertaken in other cities and counties. As a major problem, this group decided to coöperate in conducting a reading survey throughout the elementary schools of the city and to attack the general problem of improvement of instruction in that subject. After the giving of the Stanford Achievement Test, they selected for special study the 108 pupils whose reading level was at least one year below the expected standard of achievement. The National Intelligence Test and the Stanford Revision of the Binet-Simon Intelligence Test were administered to each of these pupils. Two copies of the Reading Creed, reproduced from the monograph, were given to each teacher in the elementary school with the request that she check one copy and return it to the central office for tabulation and keep the other copy for use in a general conference on reading. One or two conferences were devoted to a discussion of the points raised in the creed. The remedial treatment of these 108 pupils became the center of discussion. The teachers were asked to list the particular difficulties in reading encountered by the pupils in these grades, and a committee was appointed to classify these difficulties and to add others from a list of printed sources. A conference was held on how to teach these pupils to read; later, demonstration lessons were taught in the different grades. Certain teachers volunteered to prepare special exercises which they thought could be used effectively and these were discussed in conference. The problems of proper construction of remedial exercises became apparent. The superintendent and supervisor prepared and administered to the teachers a reading test designed for the pupils of one of the grades. The teachers, failing to answer several of the questions, challenged those questions. This introduced consideration of the type of questions, of the construction of suitable informal remedial exercises, and of the values which should be emphasized in such exercises. During the process of the deliberations, particular problems were assigned for research, such as the study habits of groups of poor and good readers, the effects of special remedial exercises, the effects of vocabulary drills, etc. The effects of the total program were measured by repeating the Stanford Achievement Test and other reading tests at the end of the school year. The results of these various investigations were incorporated in special reports which were filed with the in-

structors, and also were mimeographed and distributed to all the teachers of the system. Surely this description reveals an administrative staff, under the momentum inspired by this course, actively directing the teaching staff in a frontal attack on the improvement of instruction in reading.

CONCLUSION

Space precludes all else but the statement that it is the prevailing opinion among members of the staff of the School of Education of the University of Michigan that the special nature, organization, and conduct of this course constitute a real contribution to the professional growth of those recently receiving advanced degrees and in stimulating their participation in the activities of educational research. It is almost a truism to state that in 1934-35 the school workers of Michigan were engaged in the scientific study of instructional problems.

THE PLACE OF INSTRUCTION IN LIBRARY METHODS IN EDUCATIONAL RESEARCH[1]

CARTER ALEXANDER
Teachers College, Columbia University

PLACE OF LIBRARY METHODS IN EDUCATIONAL RESEARCH

A greatly increased importance for library methods in educational research was inevitable. Could anyone who really looked ahead have expected anything else? The increasing floods of documentary materials dealing with education were certain in time to make it extremely dangerous to circulate a piece of educational research when the investigator was completely ignorant of what others had found on the problem and of how they had handled it. Level-headed educators, whether engaged in research or in applying it, know that such ignorance has very little chance of producing anything except more and equally futile ignorance.

Despite this situation, which favors careful bibliographical study, a most unfortunate misconception of library work continues to limit the value of all too many educational researches to pitifully small results. To some, the thing to do is to evade the library work, or if that is not possible, to muddle through it somehow. To a person holding this view, library work is almost wholly routine or mechanical drudgery. On the contrary, adequate library work precedes and accompanies practically all good educational research. With adequate library work, the given educa-

[1] Read before Section C, American Educational Research Association, Cleveland, February 24, 1934.

tional investigation has a reasonable chance of being sound and fruitful. Without such bibliographical effort, it is very likely to be sterile, pseudo investigation. Doubtless a realization of such facts was behind B. R. Buckingham's insistence on an educational research library when he started the Bureau of Educational Research at Ohio State University.

The place of library methods in educational research is very similar to that of statistical methods. By no means do all educational investigations require the use of statistical methods. Neither do all studies require library methods, although, for successful prosecution, many more require library procedures than need statistical techniques. To use bibliographic footnotes and references for mere adornment or to create a false impression of scholarship, is just as bad as "to drag in statistics by the hair" for the same purpose. Again, both statistical methods and library methods have both mechanical and thought phases. Speed, accuracy, and a knowledge of short-cuts in computation are important in statistical phases of educational research. But it is far, far more important in such aspects of investigation to know when to use statistical methods, when the original statistical data are worth-while as a basis for computations, which methods of computation are best for the data and ends in view, and what the results really mean. Similarly, library methods involve much mechanical work such as running down references, getting them accurately, keeping them in standard form, and the like. But it is much more important to know where to look for references, how to evaluate them, and how to save as much time as possible on the mechanical features so as to have more time for the thought and interpretation aspects of the study. Many so-called statistical studies in education could, with strict justice, be labeled "ant work," because they are the product of a kind of "computational ants" who were busy enough on the hard mechanical labor, but gave no sign of understanding the higher aspects of statistical methods and interpretation in relation to their problems. Likewise, many educational researches could with equal justice be labeled the same way, because they were done by a kind of "library ants" who had no more conception of the higher possibilities in using library materials than so many termites. In fruitful statistical studies in education, the data pass through the head of some competent thinker and not merely through the computing machines, and the fingers of the typists and the draftsmen. Similarly, in worth-while library work, the materials pass through the brain of a thinking investigator and not merely through his card indexes and notebooks. At the same time, a researcher can no more safely assign, without check-

ing, all reference-seeking, reading, and abstracting to library assistants than a statistician can delegate all the computational aspects of his work. In both cases, the directing head of the study needs to participate in the mechanical work sufficiently to plan it intelligently and to be responsible for its comprehensiveness and accuracy. Both statistical methods and library techniques, then, involve the same need for using directive intelligence, and for deliberately relegating to their true minor place the mechanical aspects of the work.

SPECIFIC NEEDS FOR LIBRARY WORK IN EDUCATIONAL RESEARCH

If the educational investigator is to produce worth-while results, with a reasonable expenditure of energy, he must have a working knowledge of library methods whenever he needs to do any one of five specific things:

1. *To find the problems really requiring research.*—Many lists of and suggestions concerning worth-while problems for educational research exist in all areas, if one but knows where to look for them. It is, therefore, usually very foolish for a man to undertake a given study until he has looked up the lists and suggestions pertinent to his area of interest. Moreover, to avoid ridicule for inexcusable ignorance and needless duplication of previous work, he must know fairly early the former investigations of his problem and their limitations, before he seriously starts another study in the same field.
2. *To secure data and information necessary to solve the problem involved.*—This holds for most problems in educational research. In experimental studies the research worker gathers his own data. In questionnaire studies he collects his facts in another way. But even in these studies, he often needs library materials to show trends, and virtually always for comparison with previous investigations. For most other types of educational research, many of the best materials exist somewhere in documents. The knowledge of where to look for these documents also exists in still other documents if one but knows where to search.
3. *To secure information necessary for interpretation of his own findings by comparison with the findings of other researchers.*—Few studies can have much meaning except as the results are interpreted in the light of the findings of other investigations. Much the same thing holds for the methods of research employed,—their

scope and validity are often best determined by comparison with the methods used by other workers in similar studies.

4. *To find out about research methods.*—In every piece of educational research that amounts to anything, the worker must isolate his particular problem, set up the research, prosecute it, interpret its results, and present the findings effectively. He may have covered all these steps in some book or course on methods of educational research, and when confronted with the problems of procedure will of course try to recall his knowledge from such sources. But as time goes on, he will forget much of this earlier information and, in addition, will wish to benefit by the knowledge of others and by later discoveries. He can secure these last two things from library sources if he but knows where to find and how to use such materials. If he does not know and remains in ignorance, he is almost certain to become a "back number." In the world of educational research he will be like a man on foot trying to compete with one in a car with respect to reaching a distant point on the highway.

5. *To save for the thought and interpretation aspects of a study the time and energy often wasted on the mechanics of its library phases.*—Saving time for the higher phases of an investigation is possible only as the worker understands how to avoid waste in doing the library activities involved. This waste often occurs because the researcher is ignorant of how to locate library materials and of how to work effectively with them. The lack of just such knowledge prevents many so-called "researches" from ever being more than routine bibliographic jobs. The same lack results in all too numerous studies in which the bibliography was obviously worked up after the study was made, and consequently could have had little or no influence on the thought involved. The proper function of a bibliography in an investigation is to give to the worker sources with which to do proper thinking and to the reader materials with which to check the investigator's thought.

SPECIFIC ESSENTIALS IN LIBRARY WORK FOR SUCCESSFUL EDUCATIONAL RESEARCH

A minimum list of things in library work that the educational investigator either must know or quickly learn how to do, includes at least the following four main headings with their appropriate minor divisions:

1. *Concerning bibliographic work* he must know how to "scout" for references, how to make up an exhaustive bibliography, how to keep references in the bibliography organized, and how to make up the final bibliography.

   If an educational investigator is to keep his perspective, he must know how to compile quickly a short bibliography that will "high spot" all important phases of the whole problem at the outset, and of any section when he concentrates on one phase. Otherwise he will be smothered with the mass of library materials involved, or fail to cover important areas of his study or of a given section.

   Knowledge of how to compile as exhaustive a bibliography as possible for the "time spans" necessarily involved in the given study, or in some section of it, is necessary for several reasons. Without such information, avoidance of duplicating other research is difficult, and the worker cannot be sure that his methods of attack are sound or know what his findings really mean.

   To compile successfully either a "high spot" or an exhaustive bibliography requires at least four specific types of knowledge. One must know how to draw up headings under which to look for materials, and this in turn requires knowing where to secure initial lists of headings. He must at all times know the likely sources of the needed materials and data, or the references that will tell him how to locate such sources. He must know the necessary library index tools and how to use them with profit and dispatch. He must know acceptable bibliographic forms that will be useful to him throughout his study and which will not require too much rewriting for publication in the final bibliography.

2. *When and how to do the different kinds of reading on different phases of a research.*—These include: rapid scanning of bibliographies to "spot" promising references; equally rapid scanning of a book or article to see if it is worth noting as a reference; rapid reading of a reference to get the "run" of it and to note the parts worth careful reading; and severely critical reading of important passages with due care for their setting and comparison with other documents in the same field. When and how to use sampling and short-cuts are as essential in the reading phases of an investigation, as in statistical study.

3. *When and how to take and use notes.*—The essentials here include: when to take notes, particularly so as not to interfere with profitable reading; how to take notes; how to keep notes organized for effective and easy use at all times; and how to make the most of one's notes on library materials.
4. *How, throughout all the library work, to save time and energy on its mechanical phases.*—This, of course, releases time and energy for the more important phases of research, namely, thought and interpretation. The speaker's observation of educational investigators is that many of them waste much time on the library phases of their studies. These wastes come largely from such causes as the following: The worker does not start his library work early enough. He goes to the library before deciding definitely the purpose of the entire study or of the section on which library materials are desired. He begins to hunt materials without sufficient thought as to where they are most likely to be, or "kids" himself along with the idea that, as the references pile up, he is making progress. In reality, this condition is no more true of library procedure than of statistical work when an investigator tabulates and manipulates a thousand useless cases. In the first instance he tends to substitute the "soothing routine" of bibliographic mechanics for hard, clean thinking on the library phases of his study. The worker becomes "bogged down" in library materials because he has not kept his perspective by the "high spotting" method of securing at the start references covering the whole area, and for each section when intensive work is begun on the latter.

INSTRUCTION IN LIBRARY METHODS

The foregoing discussion should make it clear that most educational research requires for success a large amount of library information and of knowledge concerning how to use library materials profitably. This information and knowledge are so extensive and specific as to require definite instruction, if one is to have any reasonable mastery of the materials and procedures involved, within a reasonable time. Instruction in library methods, then, has a definite and important place in any instructional program in methods of educational research.

Time does not permit an analysis of details concerning how to secure the essentials of instruction in library methods or just how to give such training. Moreover, the speaker has given his views concerning and experience with such instruction, in print in three other places, the second

of which has a "high spot" bibliography.[2] In conclusion, he has found the following story the most effective instructional device for presenting to students the best way to handle one of the greatest difficulties in library work. This difficulty is that of locating documents known to exist or fairly certain to be in existence, when direct references to them cannot be found easily. A horse strayed from an English village and all of the men, save the village idiot, went out and searched long. When they returned, worn out and unsuccessful, the idiot said he would find the horse. To the amazement of all, he shortly returned with the animal. When asked how he did it, the reply was: "O, that was easy. I just thought if I was a horse, where would I go. And I went. And he had." That is, in library work, a very ordinary person who seriously looks at references from the viewpoint of the references and data themselves, has a good chance to find them. But the most brilliant investigator who begins to hunt for hidden references, thinking only of himself and his needs, unwilling or without the knowledge to put himself imaginatively in the position of the library materials, is no more apt to find them than were the normal villagers to locate the horse.

Functions of Research Bureaus in State Departments of Education in Promoting Research Among Field Workers

Warren W. Coxe
New York State Education Department

The strategic position of research bureaus in state departments of education affords them an unusual opportunity to promote research among field workers. Field worker, as used in this article, is assumed to be an educator whose primary responsibility is something other than research. Because the state is the unit of educational control in the United States, the state department is in a peculiar position of leadership. Members of state departments, through their intimate acquaintance with

[2] Alexander, Carter. "The Library Professor and Educational Research," *School and Society*, XXXIX (April 14, 1934), pp. 457-64.

Alexander, Carter. "Library Methods in Educational Research," *Review of Educational Research*, IV (February, 1934), pp. 92-96.

Just as proof of this article came, the author's two books giving in full his views on instruction in library methods were issued by the Bureau of Publications at Teachers College, Columbia University. The books are a text, *How to Locate Educational Information and Data*, and an accompanying workbook, *Alexander Library Exercises*.

school reports and through their knowledge of educational conditions of the state gained by visiting schools, have an overview of educational problems which makes their advice on research studies particularly helpful.

In an attempt to describe the functions of research bureaus as they impinge on research in the field, it may be stated that these functions may well be considered a first lien upon the time of the bureau. For such a bureau to build a large staff so that it may do all of the research itself, is neither possible with limited finances nor desirable if greatest general advancement is sought. The aim of the bureau may well be the raising of the general level of educational research throughout the state to the end that educational practices may be continually improved on sound scientific bases.

Four ways of promoting research among field workers are mentioned below. These have been in operation in New York State and in most other states having research bureaus. The list is not complete but is intended to represent the type of function which current demand has brought into existence.

1. The preparation of bibliographies of those research studies which pertain particularly to state educational conditions can be made very helpful, because many studies of significance are neither published nor announced. Frequently these studies are masters' or doctors' theses which are deposited in a library and may be obtained only through interlibrary loans. Sometimes they are studies which are mimeographed and distributed locally or in a very limited way. The distribution of such bibliographies will help field workers to know where help may be obtained on their problems and to determine what fields are in need of further study. If information about such studies can be distributed promptly, duplication of effort can sometimes be avoided. Also, this recognition of research effort has a very salutary effect upon the workers themselves. It has happened that a worker by this means has been encouraged to extend his study. Also there has been an apparent effort to select better problems, at least problems which are more closely related to school practices. Where facilities are at hand, the idea of a bibliography might be extended to include brief reviews of some of the more significant contributions.

2. A state research bureau may gather, from time to time, statements from educators as to the problems they either meet in the conduct of their schools or believe the schools are facing, and which are in need of further study. Such statements of problems, when studied in connection with research already completed in the state, can form the basis of an analysis

of needed research. It probably is unwise to attempt to formulate specific research topics, but an analysis of various fields, showing what information is available and the areas in which information is lacking, should help materially to guide new workers in selecting their own problems for study. There is no more difficult task than the determination of the research which still needs to be done in any field or which is necessary before educational changes can take place soundly. Past research must be interpreted in the light of the social milieu in which the schools operate. The field worker needs the orientation which can come from such an analysis.

3. In every state there are committees of educators working upon such problems as tenure, salaries, curriculum, health education, education by radio, correspondence courses, etc. Either through membership on such committees or as advisors, the research bureau can make available to these committees research already completed, relating to the topic under consideration or can conduct studies for the committee which will help it in the solution of the problems. A further value in having a research bureau work with such committees is that gradually decisions will be reached through analyses of factual material instead of through compromised opinion. This brings about a completely new attitude in regard to the solution of educational problems and paves the way for continuing change which is not upsetting to school organization and is based upon sound data. It might also be added, parenthetically, that the value of such contacts to members of the research bureau is considerable, in forcing them constantly to plan research which is demanded by field conditions.

4. The research bureau will inevitably be called upon by a great number of individuals to criticize and plan research studies. These requests may come from members of the department staff, as well as from graduate students and public school people. The bureau may at times be called upon to help formulate questionnaires, to express an opinion as to whether the data to be gathered will give an answer to the problems in hand. Graduate students in colleges and universities of the state often find work upon problems which are of statewide significance much more interesting and profitable than those of only local scope. Furthermore, the education department can get a great deal of needed research work done by coöperating with these graduate students. Moreover, there are many superintendents, principals, and sometimes teachers who have a definite interest in carrying on, outside of their regular work, a certain amount of research. They wish suggestions for studies, or someone to advise them in planning their studies, and sometimes help in obtaining data which they may use.

Four ways of promoting research among field workers have been mentioned. In general, it may be said that research will be promoted to the extent the research bureau can encourage the formation of policies based upon objective data. Research should not be "busy work," nor should it be done primarily as a means for personal promotion. The object is primarily the improvement of the school system of the state. There is thus a splendid chance through the promotion of research among field workers to center attention upon fundamental educational objectives.

Sooner or later several troublesome questions will appear. Granted that not all field workers can profitably participate in research activities, is it possible to indicate the training, experience, and personal qualities necessary for such participation? Because of limitations of training and of facilities to follow certain procedures, how can one best describe the kind of research which can be carried on successfully by a field worker? Stating the question from another point of view: With what investigational procedures should the field worker be acquainted? These questions emerge as soon as research becomes popular.

Although satisfactory answers to the above questions may not be possible at the present time, some suggestions are possible. It is reasonable to suggest that the research of the field worker should grow out of the problems of his job. If such a piece of research is technically sound, it will be a valuable educational contribution to the extent that the worker understands his job and is able to see it in its proper place in the whole field of education. In other words, the field worker should confine his research activities to the field he knows best through training and experience.

Although there are certain types of research obviously not appropriate to the field worker, such as those involving elaborate statistical treatment, there are other types for which he finds himself in a very strategic position. It is suggested that he undertake problems which involve following individual pupils, classes, and teachers through a period of years, noting not only the immediate but the ultimate effect of new educational changes. Usually this will involve the use of a controlled group. Such a procedure is appropriate to many mental hygiene problems, to certain curriculum problems, and to various other problems related to teacher selection, classification of pupils, methods of teaching, promotion, etc. Another field of research might be the relationships between school and the home, other educational agencies in the community, occupational life of graduates, and other community interests.

Naturally the field worker will be encouraged to do research by being guided to those problems he can do best. Other problems are more appropriately undertaken by a university or a research bureau.

Institutional Promotion of Field Research

W. W. Charters
Ohio State University

Higher institutions of learning may promote educational research among field workers in a variety of useful ways.

The basic service of colleges of education, teachers colleges, and graduate departments of education to field research is to train field workers in the fundamental techniques of educational research in its different areas. Foremost in importance are the techniques of experimental education in which in essence a problem is defined, rigid control situations are set up, and the results obtained are secured as carefully as possible under local situations. Problems of instructional method yield with relative ease to these procedures. Some problem areas involve the use of statistical procedures of greater or less complexity and demand training in the computation of statistical data. The area of school administration is populated with scores of problems, and again the higher institution is obligated to provide the basic techniques of investigation in this field. For those interested in the more intensive study of children, the field of psychology provides a battery of techniques whose mastery is essential to work in that area. Indeed, the problems to be studied on the job are so numerous that any student with thorough training in the techniques of a given field can find more problems to solve than he has time to complete. Consequently, every faculty member in educational institutions has a potential contribution to make to field work through the humble process of thoroughly teaching research techniques in his field to his advanced students.

Training in techniques of research is, however, of no service to field work unless the parent institution adds two other essentials. The student will carry on field work only if he has a more than ordinary interest in research. Mechanical skill in performing the operations of research must be motivated by a desire to conduct studies and this desire must be strong enough to force the student to overcome the obstacles to research in the field—obstacles of time, required duties of the job, lack of local appreciation, and absence of detailed and immediate guidance. To develop this interest in the scientific study of problems is, therefore, an essential responsibility of that higher institution which is committed to the objective of promoting field research.

In addition to developing a love of careful study of practical problems, the parent institution must give training in the organization of research problems. In the laboratories of the college of education the professors in charge very frequently lay out in detail the procedures of investigation and permit the students to carry on mechanically the operations defined in a job specification. But for field work the professor is unable to outline detailed operations, and geography prohibits the intimate guidance of the field worker. To meet such a situation the local investigator must be able to go ahead on his own initiative and plan his program with only occasional advice from his professor upon general lines of policy and major methods of procedure. It follows, therefore, that training in organizing investigations is an essential service to be provided by higher institutions in the interest of field studies.

In effect, the basic training provided by educational institutions includes the development of a serious interest in scientific investigation as a work-a-day technique to be used on the job, competency in the organization of simple investigations, and a mastery of the routine techniques used in appropriate special fields of study.

It is apparent to the director of research that the problems which can be profitably and successfully attacked in the field belong to the type of practical research rather than to the field of pure research. That is to say, the problems studied most successfully in the field are those which develop from "break-downs" in practice. A teacher who is not entirely satisfied with his methods and desires to try a new one can justify a careful study on the basis of practical use. Scores of problems in instruction, curriculum, supervision or administration, emerging in a thoughtful evaluation of procedures in these fields, give agreeable opportunities for study and investigation. Basic studies without immediate application in practice seem to belong to the research laboratories of graduate schools.

From the administrative point of view three types of field research may be distinguished.

The easiest type to administer is individual research. In this area the institution directs the investigation of an individual upon a problem of his own. The Master's and the Doctor's dissertations belong to this field. Ordinarily, the student works with an advisor belonging to the college or university faculty and in class develops under supervision the procedures to be followed in the field. With this initial assistance and with the aid of recurring conferences, the field study may be carried to completion.

Not so frequently used is the minor-problem type of individual research. Here a student works with a professor in a chosen field and learns

the basic techniques involved in investigation therein. During this period of training in summer school or regular session the student selects one or more problems which he would like to study on the job. He formulates his techniques, and works out in detail his methods of procedure. These are reviewed by the instructor as a class exercise and revised by the student if necessary. Then *in absentia* the student enrolls for some form of off-campus credit and during the year keeps contact with the instructor in person or by correspondence, and in due time receives the appropriate amount of credit.

The potentialities of this type of field work are very promising. Many students interested in research, who are not yet engaged on a dissertation, enjoy formal work upon practical problems as a means of recreation, to lighten the routine of their regular work. If simple problems are selected, the number of persons who can be engaged upon minor research is limited only by the number acquainted with scientific methods. The results to the students are increased enjoyment, and to educational research are increased masses of significant data, if the problems are wisely selected.

The wise selection of field problems leads to a second type of research as seen from the administrative point of view.

It is unfortunate that most of our graduate investigations are selected at random. A student may come to the laboratory with a problem which he has casually hit upon. Even faculty advisers may suggest isolated problems of their own without logical connection with other problems; and by such unplanned selection, industrious efforts expended upon studies often fail to be of that maximum consequence which they would attain, if they had been directed to sections of a larger problem. This value is ordinarily completely, and indeed unnecessarily, lost because after allowance is made for the intense desire of some to solve their own selected problems, the majority of students prefer to work upon a section of a vaster problem which as a totality will have major scholarly or social value.

The higher institution may formulate major programs of research and permit students to work upon individual sections. For example, in the field of school-building-construction costs and rates of obsolescence, there is no body of data which will with accuracy aid architects in deciding upon the best types of building to erect in specific locations. This problem is of major significance in the expenditure of millions of dollars per year, in the raising and paying of bond issues, and in the changing uses to which the buildings may be put from year to year. To secure data for

this area, a dozen sub-studies are clearly indicated to be made by school administrators upon numerous types of building and locality. These studies can be made only in the field. Each is a minor study involving a few hours of university credit. But when the study is programmed, volunteers freely proffer services; the selected investigators work with deeper enjoyment because they contribute to a common cause; and of greatest importance, an important problem yields to this programmed attack. Everything is to be gained by programming ninety percent of all research effort. The other ten percent provides the opportunity for the unplanned exploration of promising adventures.

In such cases the parent institution provides the program, the field worker selects his section and organizes his procedures, and the institution gives advice, provides consultative service, furnishes modest financial assistance, and in general acts as the coördinator of the project.

Of equal importance is programmed research originating in the field. In recent years curriculum building has been a coöperative enterprise carried on by the staffs of school units. A program is worked out by the local leaders and specific sections are assigned to appropriate individuals and committees. In such cases the higher institution may provide guidance. On occasion, the members of committees may come to the university summer session for four or six weeks to mature their plans in conference and to obtain the advice of the research staff. In other cases, the parent institution takes direct charge of the program, or acts as a consultant.

Finally, the higher institution can greatly increase research production by the mere stimulation of research. Hundreds of graduate students would undertake studies if the higher institutions would propose the studies and give encouragement to the workers when they became discouraged. In the last analysis the greatest single contribution of the higher institution to field research is through stimulating an enthusiastic and persistent interest in the scientific study of every-day problems. If the interest is keen, the activities will care for themselves.

Teacher Participation in Recent State Curriculum Programs

J. Paul Leonard
College of William and Mary

The Problem

The extent and kind of teacher participation desired in curriculum programs has been the subject of frequent discussion. In order to show

the amount and character of participation by classroom teachers in recent state programs, which is the purpose of this review, letters were sent to state directors of curriculum work in states where programs were under way. Reports were received from the following states: Virginia, Arkansas, Mississippi, North Carolina, California, Pennsylvania, Florida, Idaho, Connecticut, Oklahoma, Massachusetts, Iowa, and Texas. This review will describe the situation in all these states except Idaho and Oklahoma, from which incomplete data were received.

PREVIOUS STUDIES

Langvick[1] shows that in the 31 states working upon curriculum programs during 1928-30, the personnel of the various committees was made up largely of public school administrators, state department officials, and professors of education. In Minnesota, for example, of the 33 members of their state curriculum committees, none was a classroom teacher; in Iowa, of 113 members of the elementary production committees, 9 were classroom teachers and 42 were college professors; in North Dakota, classroom teachers made up 22 percent of the committees. California, West Virginia, and Louisiana offer contrasts. In California teachers made up 62 percent of the production committee membership, in West Virginia 54 percent, and in Louisiana all elementary teachers were asked to participate.

In 7 of the 11 states Lide[2] studied, classroom teachers were seldom chairmen of committees, but they comprised nearly half of the membership of production committees. In only 3 of these 11 states were classroom teachers represented on the steering or executive committees. Harap and Bayne,[3] after studying 317 city courses of study, expressed the belief that the "most revealing conclusion from our analysis is the important role that the teacher plays in (city) curriculum construction. . . . The teacher is the leader in the building of single courses of study more than 3 times as often as any other school official."

In most of these programs the character of the teacher participation seems to be of the nature of intensive analysis of subject matter material

[1] Langvick, Mina M. *Current Practices in the Construction of State Courses of Study.* (Washington: United States Office of Education, Bulletin Number 4, 1931), Ch. VII and pp. 16-17.

[2] Lide, Edwin S. *Procedures in Curriculum Making.* National Survey of Secondary Education. (Washington: United States Office of Education, Bulletin Number 17, Monograph Number 18, 1932), p. 72.

[3] Harap, Henry, and Bayne, Alice J. "A Critical Survey of Public School Courses of Study Published 1929-1931," *Journal of Educational Research,* XXVI (September, 1932), pp. 46-55.

and its reorganization into various kinds of courses of study. Very little original research was done. Harap,[4] in analyzing 142 courses of study, discovered only a very small amount of research. He found, for instance, only three examples of research being used to determine objectives. Considerable emphasis has been given to the value of curriculum programs as effective instruments of teacher supervision. Harap emphasizes this in his report, and Holloway[5] demonstrates experimentally the supervisory values of curriculum programs.

PARTICIPATION IN RECENT PROGRAMS

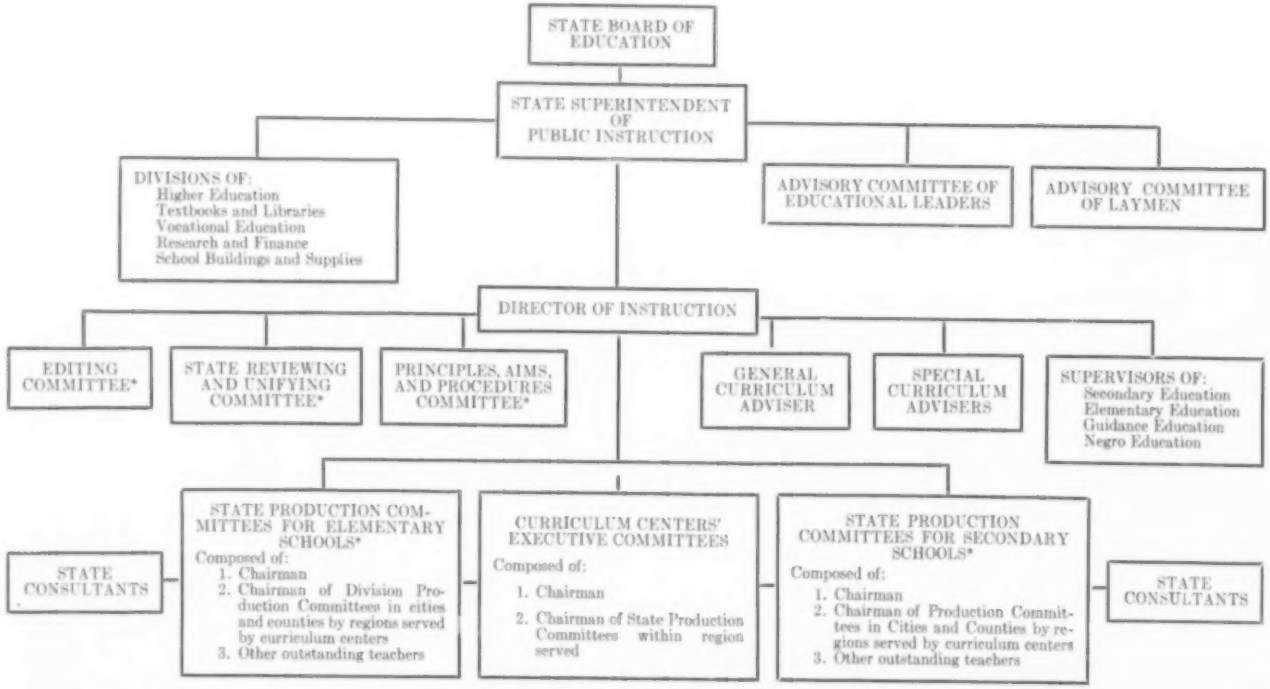
A group of southern states, North Carolina, Virginia, Arkansas, Texas, Florida, and Mississippi, have recently launched state-wide curriculum programs. The programs differ in points of view and are in various stages of completion, but to date they bear the following resemblances as far as teacher participation is concerned:

1. Each state endeavored to enlist every teacher in some phase of the program.
2. The states initiated their programs by preparing a study-course bulletin which was to be used by teachers in study groups. North Carolina prepared its bulletin for summer school courses; the rest of the states used their bulletins with teachers organized for study in local schools throughout the school year. The directors of the state programs estimate that the following numbers of teachers studied these bulletins: Arkansas 7,000, Virginia 6,000 teachers, Florida 1,200-1,500, Texas 35,000, and in Mississippi 9,312 teachers were organized into 451 study groups with 85 percent average attendance.
3. These states have issued (or plan to do so) procedures bulletins to direct teachers in actual production. Several of these bulletins were written in part by classroom teachers.
4. In all of these programs the bulk of the production was done or will be done by teachers.
5. They used a similar state organization utilizing college and university groups, public school teachers, and groups of laymen. The

[4] Harap, Henry. "A Critique of Public School Courses of Study, 1928-29," *Journal of Educational Research*, XXI (February, 1930), pp. 109-19.

[5] Holloway, William J. *Participation in Curriculum Making as a Means of Supervision of Rural Schools.* Teachers College Contribution to Education, Number 301. New York: Bureau of Publications, Teachers College, Columbia University, 1928.

CHART I — CENTRAL STATE CURRICULUM ORGANIZATION*



Organization for Virginia State Curriculum Program. Richmond, Virginia: State Board of Education Bulletin Number 5, Volume XIV, March, 1932, p 17. (Teachers were represented on the groups marked with an asterisk).

organization used by the state of Virginia, shown in Chart I, is similar to that used by the other southern states. Modifications were effected by states to meet local differences but the essential principles of this organization are typical. North Carolina probably departed from this basic organization more than any other of the states. This chart will give some idea of the committees upon which teachers served.

6. In most of the states the executive or steering committee was made up of people other than classroom teachers. Teachers were represented on these committees, but they were in a decided minority. The production committees, however, were composed chiefly of teachers.

For the production of its elementary courses of study, California is using an entirely different kind of organization. The courses of study in this state are county, not state, products. The typical organization is to bring teachers in the counties together under the direction of the county superintendent or supervisor and to have these people direct the collection of the superior class work of teachers. This material is published by the State Department of Education and is sent out as suggestions to other teachers. The best known of the California courses is the *Teachers' Guide to Child Development*, for kindergarten-primary level, which represents a unified effort of many teachers over the state. It was prepared largely by teachers and edited under the direction of the California Curriculum Commission. The personnel of the 135 committee members producing this volume was as follows:[6]

Elementary principals	3
Elementary supervisors	42
Elementary classroom teachers	77
College professors of education	11
State department official	1
Director of city research	1

In Pennsylvania all the courses have been prepared under the direction of the State Department of Education. This state has adopted the plan of utilizing competent laymen to assist in the preparation of courses. For instance, the membership of the committee for the bulletin on "Safety" included officials of the State Highway and Safety Patrols; on

[6] California Curriculum Commission, *Teachers' Guide to Child Development*. Washington: United States Office of Education Bulletin Number 26, 1930. See introduction.

the art course committee were artists and directors of art museums; the music committee included public and college music teachers and directors; and the library committee included state, college, and city public librarians. These people actually produced the courses of study, with the aid of the State Department of Education and a few classroom teachers.

In Connecticut the state is "committed to a form of education growing out of guided experience." Most of their curriculum work so far represents the collection by the State Department of Education of units of work actually used by teachers in rural areas. The work is more of a program of continuous collection of materials rather than an organized state curriculum program. They have to date collected material from teachers in 95 rural towns.

In Massachusetts the revision of the curriculum has been in progress the past ten years. The work is directed by the State Department of Education and four superintendents of schools. Subject committees of from 5-12 members, representing a superintendent as chairman, teachers college faculty members, and one or more classroom teachers or special supervisors, are responsible for actual course of study production. To date 15 printed and 3 mimeographed courses have been produced. The Massachusetts State Superintendent of Elementary Education estimates that about 100 public school teachers, principals, supervisors, and superintendents have been involved in this curriculum work.

In Iowa the work is under the direction of the State Department of Education and an executive committee of 8 members made up of school administrators, but no classroom teachers. From 1930-35 Iowa produced 21 secondary courses of study, using all types of school people on their production committees. Classroom teachers comprised 42.5 percent of the membership of the production committees.

In order to show to some extent the proportion of teachers participating on production committees, the following table was prepared for the states from which figures were available.

These figures show that while there is still considerable variation in the percentage of classroom teachers on production committees, there seems to be a trend toward having such committees composed largely of those who have teaching contacts with children. A comparison of these few figures with Langvick's report in 1931, cited previously in this review, shows a change in this policy. Most notable is the change in the personnel of the Iowa Elementary and Secondary Committees. In terms, however, of the total teaching staff of the state only a very small number of teachers actually participated in course of study production.

PERSONNEL OF PRODUCTION COMMITTEES OF FIVE STATE PROGRAMS*

State and Course	Personnel of Production Committees			
	Total members	Number of public school and college administrators, state department officials, and college professors	Number of classroom teachers	Percent of classroom teachers on committees
California (two secondary courses only)	142	8	134	94.4
California (Elementary, Teachers' Guide to Child Development)	135	58	77	57.4
Iowa (twenty-one secondary courses combined)	134	77	57	42.5
North Carolina (all elementary and secondary combined)	199	33	166	83.4
Pennsylvania (five secondary and elementary courses)	74	65	9	12.2
Virginia (secondary integrated course)	70	7	63	90.0

*Information was not available from Arkansas, Texas, Mississippi, Florida, Connecticut, Massachusetts Oklahoma, and Idaho.

Excellent examples of teacher participation were submitted as follows: in the preparation of aims by the Virginia committee, under the chairmanship of Fred M. Alexander of Newport News, Virginia; of experimental work under the direction of George J. Oliver of Northampton County, Virginia; and of social problem analyses worked out by teachers at the University of Mississippi in the summer session of 1935. These cannot be described for lack of space, but they illustrate a high type of teacher participation in state programs.

SUMMARY

An analysis of recent state programs reveals the following aspects of teacher participation:

1. State departments are seeking to enlist all teachers in some participation activities as a form of in-service training. The most universal teacher participation is in study-course enlistment. This is the only place where, in actual practice, anything like all of the teachers are enlisted.
2. Production committees are composed largely of teachers, selected for their superior teaching ability. Membership on some of these committees is voluntary to the extent that teachers who have done superior teaching are asked to prepare in writing the units taught and to submit them to the production committee chairmen. Theoretically, all teachers may belong to production committees, but in actual practice the work is done by a few teachers selected by the executive committee. In reality only a very small percentage of

teachers in a state ever participate in actual course of study production.

3. In no state studied do teachers make up a sizeable portion of the executive or steering committee. They are represented on most of these committees but are few in number. Most of the actual determination of policies of curriculum organization is done by state department officials, public school administrators, and college professors of education. The actual production of material to conform to these policies is done by teachers.

   There is a sharp division of policy here. Some states endeavor to encourage individual teacher freedom and then collect the best products of teaching, to be published and distributed by the state departments as suggestive of teaching organization. Other states launch a definite curriculum program, direct the determination of aims, philosophy, and procedures, and then use superior teachers to produce materials conforming to these points of view. Such products are then tried out, modified, edited, and printed, to be distributed as suggestive courses of study.

4. Actual teacher production on modern state programs takes the following forms:
   a. Teaching and writing units of work for publication.
   b. Analyzing and organizing teaching materials to be included in courses of study.
   c. Analyzing and compiling stated aims, reports of research, prepared courses of study, and statements of philosophies and psychological principles.
   d. Making bibliographies and selecting text materials to use in courses of study.
   e. Experimental teaching and evaluating materials actually prepared for courses of study.

5. Little research, except that of an empirical nature, seems to be done on modern state curriculum programs. The findings of experimental studies are utilized, but practically none of this type of research is being done. Probably a new concept of curriculum research is being formulated. Some experimental contributions are being made by superior teachers in trying out curriculum organizations.

6. All work of teachers on curriculum programs seems to be gratuitous. State departments are utilizing teachers and supervisors to produce materials which would be financially impossible, if even reasonable compensation were paid. Teachers, without release from classroom teaching in most instances, are writing recent state courses of study.

CONCLUSIONS

Three points can be emphasized from this analysis of state programs:

1. The present emphasis upon teacher study as an initial phase of curriculum programs is sound. If carefully directed by superior people, probably no other phase of state programs contributes so well to raising the level of teaching in the state and prepares teachers for the acceptance of new courses of study when they are actually produced.
2. The practice of trying to have every teacher in the state participate in actual production is not sound, is wasteful, and is impossible of achievement. Several states have adopted top heavy organizations whereby a central committee goes over everything turned in by teachers, chooses the best, and prints it. Such a course of study has no central organization or continuity, nor does it represent anything better than present practice.
3. The building of a course of study is a difficult task. To make up production committees of teachers who merely represent a section of the state, as has sometimes been done, will never contribute to better school practice. The present practice of resorting entirely to the plan of leisure-time teacher-production will produce incompletely developed programs. Too much haste, too little experimentation, and the expenditure of too little time and thought on the part of production and executive committees seem to characterize recent state programs.

In-service curriculum training and experimentation are the responsibility of every teacher; advance in content and course of study organization is the function of the most capable teachers and administrators. Real course of study improvement will not advance materially except by the combined action of such persons when they are charged with this responsibility and are given the time and resources to discharge it. The distinction between teacher improvement through curriculum study, and improvement in

course of study organization should be kept clear. The modern state curriculum program should be so organized as to provide for both types of growth.

NEEDED RESEARCH IN THE CURRICULUM

A. K. LOOMIS
University of Chicago

THE purpose of this discussion is to point out some examples of the most important researches that are needed in the curriculum and to indicate how field workers may contribute effectively to such research projects. Before proceeding with the discussion, it is necessary to define the terms, research and curriculum, and to differentiate between the two chief methods of curriculum research.

The term "research" is here used as defined in the Second Edition of the Unabridged Webster's New International Dictionary. According to this authority, research is "critical and exhaustive investigation or experimentation having for its aim: (1) the discovery of new facts and their correct interpretation; (2) the revision of accepted conclusions, theories, or laws in the light of newly discovered facts; (3) or the practical applications of such new or revised conclusions, theories, or laws."[1]

The term "curriculum" has been used in so many senses that it is difficult to avoid ambiguity. The best that can be done is to state clearly the meaning of the term as used in this paper and then to rely on the reader to keep clearly in mind the strictly limited sense in which the term is used. The term curriculum is here used to refer to the planned sequence of learning experiences.

By way of preliminary definition of terms, it still remains to differentiate between the two chief methods of curriculum research, the historical and the scientific. As Fling points out in *The Writing of History*,[2] science deals with generalizations and its terms are common nouns, but history deals with unique, individual, complex wholes and its terms are proper nouns. As he says, the scientist studies and organizes facts from the point of view of the general, of repetition, and of law. The historian, on the other hand, studies and organizes facts from the point of view of difference, of individuality, and of uniqueness. The same facts may be

[1] 1934 edition, p. 2118.

[2] Fling, Fred Morrow. *The Writing of History*. (New Haven: Yale University Press, 1920), pp. 18-20.

treated by both methods; in fact, any given set of facts must be treated by both methods, if complete knowledge is the goal.

We are now ready to state a series of propositions which will define the general field of curriculum research and will indicate the methods to be used.

1. Curriculum research is limited to investigation and experimentation concerned with the planning of sequences of learning experiences.

2. The new facts discovered by curriculum research of historical nature will be synthesized into some complex whole, such as the history of the teaching of reading from 1825 to 1900.

3. The new facts discovered by scientific curriculum research will be synthesized in the form of generalizations subject to experimental verification, such as the conclusion that a mental age of six and a half years is necessary to success in learning to read.

4. Curriculum research is concerned with the selection of the goals to be attained, the determination of the means to be used for accomplishing the desired ends, and the devising of techniques and tools for measuring the results.

5. The nature and abilities of the learner, his interests and felt needs, must be given much weight in planning the sequence of learning experiences.

6. Curriculum research, therefore, uses the results of research in the psychology of learning and in the study of interests, but does not include such studies.

7. The availability of materials within the school, and the accessibility of materials in the community, must be considered in planning learning experiences.

8. Curriculum research, therefore, may be limited by the results of surveys of available materials and community resources, but does not include such surveys.

In the remainder of this paper will be considered some of the specific problems of curriculum research in order to point out how field workers may participate effectively. Field workers may be grouped under four classifications: (1) workers in laboratory schools operated in departments or schools of education in universities or in teachers' colleges; (2) workers in experimental centers such as are set up now in many public school systems; (3) workers in independent schools established and operated for the primary purpose of carrying on curriculum research;

and (4) workers in any other schools who are interested in curriculum research and who are competent to carry it on.

We may safely assume that the majority of workers in the first three classes are interested and competent, and that they are encouraged and expected to participate in curriculum research under rigorous standards of procedure. We may also assume that a fairly large number of workers in the fourth class can participate in research if their administrative officers encourage them to coöperate with carefully planned projects. But we should not overlook the very real values in experimentation under less rigorous conditions. Many teachers not prepared to carry on research may accomplish a great deal through wisely directed informal experimentation.

Teachers may participate in research either by gathering data for other workers to use, by interpreting the data themselves, or by applying the findings of research.[3]

Research in the curriculum which involves the historical method is very difficult, because of the lack of adequate sources. Aside from textbooks and courses of study, historical research requires well-kept records of actual teaching procedures. Such records are seldom kept, even in the laboratory and experimental schools. Possibly no more important service could be rendered by master teachers than by the keeping of complete records of the teaching actually done. These records need not be published, but they are indispensable sources for historical research.

In the University of Chicago Laboratory Schools, after keeping such records of teaching for several years, a new project has just been launched. Once in three years a report of teaching for each of the main fields of the curriculum will be prepared as a joint report by members of the Elementary and High Schools. This year, reports covering teaching procedures from the kindergarten through the senior year of high school will be published for English and physical education. Next year, reports for social science and history, science, and mathematics, and in the following year reports for fine and practical arts and foreign languages will be published. These reports will be more than source materials, since they will attempt a vertical synthesis for each of the fields covered. By the plan described, each field will be reported once in three years. While no definite plans have yet been made, it should be possible to make a horizontal synthesis for any or all grades at the end of each three-year cycle.

[3] The examples which are discussed in this paper were, in part, suggested by the members of the author's class in Curriculum Construction in the 1935 Summer Session of the University of Chicago.

A second type of historical research in which teachers may coöperate effectively is concerned with case studies of pedagogical growth. To provide sources for such studies, it will be necessary to accumulate masses of material for individual pupils including numerous samples of written work, and all test papers whether essay type or new-type, standardized or unstandardized. In many centers complete records of physical growth have been kept over long periods, thus providing data for growth studies of great value. The author knows no center where pedagogical growth records covering the entire curriculum are being kept. The value of such data will be slight unless continuous records are kept over long periods for the same pupils.

In the University High School a beginning has been made in the English department in the type of research described above. Standard test papers are preserved in all departments, but several other kinds of evidence of growth are now being kept for all pupils in English. After eight or ten years a large accumulation of data should render it possible to make some significant historical studies of growth in English expressional abilities.

The examples of historical research in the curriculum which have been given must suffice. It now remains to give some illustrations of scientific curriculum research in which teachers can participate effectively. In general, this type of research involves controlled experimentation. Not only can teachers participate effectively in experimentation, but such experimentation as we are now considering must be carried on by teachers in normal classroom situations. In other words, the laboratory for curriculum experimentation is the classroom. Such experimentation may be illustrated by numerous examples, but in this brief statement it is necessary to group the experiments in some fashion.

Organization of the sequence of learning experiences presents a major issue—Does the logical organization of subject matter provide the most effective sequence of learning experiences? The answer to this question now depends on the assumptions made by the respondent. Much experimentation is going on, as witnessed by the activity movement, fusion courses, and the problem method. But little controlled experimentation has been reported, and what has been done is inconclusive. This issue demands experimental study. The activity movement abandons all attempts to organize the sequence of learning experiences according to the logical demands of subject matter. What are the results of this movement? Controlled experiment must provide the answer. Not a single

experimental set-up, but many, which will serve as checks on each other, are needed. Classroom teachers must participate in these experiments. In the junior high school the wide use of fusion courses in the social studies, in general science, and in general mathematics presents the issue in slightly different form. In the senior high school the use of problem courses raises once again the issue.

Tradition or current practice has determined grade placement and time allotment. Carefully planned and extensive experimentation should place both these issues on the way to scientific determination.

Space permits only one other example of valuable curriculum experimentation for teachers. This involves the application of the findings of research. It is certain that marked improvement in the planning of learning experiences would result from utilizing the results of research now available. An example of a procedure calculated to use the results of research will make this suggestion more concrete. A Chicago suburban elementary school enrolling 240 pupils in grades one to eight has just employed a teacher of geography who has had several years of elementary school experience and who has the Master's degree in geography from the University of Chicago. In this fortunate school the new teacher will have full freedom to reorganize the sequence of learning experiences in grades four to eight inclusive in the five-year course in geography. Under such conditions the full utilization of the results of research provides the basis for experimentation of very great significance.

In the field of the curriculum, participation by teachers in research is indispensable. In gathering data for historical studies of the curriculum, in carrying on the program of experimentation to determine organization, grade placement, and time allotments, and in applying the findings of research, classroom teachers must be depended upon to carry the main load.

Scientific Investigation of Instructional Problems

Harl R. Douglass
University of Minnesota

Should there be field research?

Within the last ten or fifteen years the volume of research aimed at educational problems has experienced a mushroom growth. Originally conducted largely by professors of education and psychology and a few bureaus of educational research, educational research is now being carried

on by thousands of teachers, principals, and superintendents in the field. Professors of education have become so engrossed in directing research projects of graduate students in the field that there is left little time and zest for initiating and pursuing their own research projects.

Unfortunately a very small portion of educational researches have any permanent value. In all likelihood they have less value than is suspected by the readers of the reports of research. In the very large percentage of instances the only appreciable merit lies in the increased knowledge and appreciation of research techniques, and a clearer orientation in the field of the problem studied, on the part of the investigator. That these things should be true is but to be expected, in view of the fact that in most instances the research is conducted by a practitioner in the field, who, however capable as a teacher or administrator, is a novice in research techniques and inadequately trained for the task. In perhaps a majority of instances, any given piece of research, usually a thesis required for the M.A. degree, is the first and last attempt ever made by its author. It need hardly be pointed out that this condition is quite dissimilar to that obtaining in other fields—engineering, medicine, business, agriculture, etc. In those fields research is carried on largely by experienced specialists in research highly trained for their work.

Problems in educational research do not yield to techniques simpler than those which are effective in medicine, engineering, and other fields. On the other hand, measurement and the interpretation of measures are much more difficult when the thing to be measured is the effect upon human behavior of a given factor. The nervous system may be observed only through its performance. To control variables so that the effect of given factors upon learning, independent of the influence of other factors, may be measured with reasonable accuracy is well nigh impossible—notwithstanding techniques which purport to accomplish this result.

With respect to what attitude should be taken relative to the advisability of encouraging field workers to carry on educational research, there are, as usual, in non-mathematical problematic situations, three alternatives—the two extremes and the middle of the road and, as usual, the middle of the road most probably lies nearer to the truth.

There are those who "pooh-pooh" the idea of field workers employing research methods in the study of their problems. The editors of periodicals devoted to the teaching of given fields, e.g., social studies, English, mathematics, etc., are not only dubious of the capacity of teachers for research but of their capacity for reading understandingly the simpler

reports of research studies, as is evidenced by the relative scarcity of reports of research in the issues of such periodicals amidst the plethora of sophomoric, evangelistic, and imaginative articles relating to values, content, and methods.

On the other extreme may be found those who attempt to encourage teachers and administrators to acquire a little learning about research and to participate in research. This tendency to lead field workers to underestimate the need for very advanced and technical procedures is sometimes so boldly exemplified that it arouses strong suspicion of courting good will at the expense of conscientious leadership. For the American Educational Research Association, the author in the last five years has reviewed about three hundred investigations relating to the psychology and teaching of mathematics. Less than a fourth of these were done carefully enough to warrant any consideration as having furnished reliable and valid data for conclusions. The majority of the remainder, pitifully amateurish, have failed to take advantage of available techniques to such an extent that the conclusions may be taken only as clues, or cues, or which along with the conclusions of a number of studies of the same problem may furnish a basis for discerning trends.

The middle of the road, in all probability the soundest attitude, is that of recognition of the possibilities as well as the limitations of research techniques in the hands of the novitiate or half-trained researcher. The remainder of the space available will be utilized in an attempt to outline the principal possibilities and limitations of the more common methods of educational research related to instructional problems in the hands of teachers and other school people in the field.

CURRICULUM RESEARCH IN THE FIELD

The principal divisions of instructional problems are: (1) those associated with the selection and organization of materials of instruction; (2) those associated with techniques of assignment, exposition, supervision of study, direction of discussion, adaptation of instruction to individuals, and motivation; and (3) those related to the measurement of learning and growth.

With respect to the materials of instruction, the central and most direct approach is not practical. To attempt to evaluate the effectiveness of alternative sets of materials in contributing to the objectives of education is almost impossible. To do so, in most instances, would mean that evaluation must await the passing of years until the subject matter and

its immediate outcomes may have opportunity to function in adult life of the pupils. Researchers are unwilling to wait that long, the pupils cannot well be followed out of the school as suitable experimental subjects, and behavior at that time will be the resultant of such a complex welter of contributing causes that the relative influence of the experimental variables may not be measured with any assurance of reliability. In the fields of standard skills such as handwriting, typing, shorthand, and composition, however, much light may be furnished in short-time controlled experiments on the problem of what content is more effective. Research workers with adequate training for controlled experimentation should turn their attention to this sort of problem.

In the field of instructional materials, accessory or subsidiary studies are of much more practical nature. Of such a type are those having to do with the frequency and the importance of need for various items such as concepts, definitions, and procedures. These include the examination of current periodical and news literature to note the need for the purpose of acquiring information and orientation relative to political, economic, scientific, domestic, industrial, and commercial problems and developments, and of concepts, definitions, background information and the like. The limitation of this particular type of research is not so much in the techniques involved as in the interpretation of the detailed findings. Needs for today may not be needs for ten or fifteen years hence and trends must be forecast in evaluating materials. Frequency of apparent need may be quite largely determined by the present capacity of the readers. If, for example, they could be counted on to understand more technical complex concepts, statistical terms and procedures, the apparent need for instruction on those items as judged by frequency of appearance would be much greater.

Any such sort of job or activity analysis not only is difficult to approach by the direct statistical methods, since it is so difficult to observe scientifically men and women as they engage in their civic, vocational, domestic or leisure life, but the gathering and interpretation of such data in most instances require not only a very keen intellect but one well skilled in the field concerned. The connections between items of instruction and their influence on behavior are commonly so circuitous as to defy tracing. For example, the effect of the study of the philosophy or history of education on the details of classroom procedure does not yield to scientific observation.

A most common miscarriage of research in this field is the gathering of opinions or superficial analysis of individuals as to frequency of use or relative usefulness of various items of instruction. Such data, except in very simple situations and when furnished by very conscientious and competent introspectionists, are rarely worthy of the statistical treatment given them and are almost certain to lead to erroneous conclusions.

On the other hand, the evaluation of courses of study or textbooks from limited points of view or better still, the gathering of factual information basic to a subjective study by experts is not only very useful but relatively simple. For example, the study of the relative space or time allotment to various topics, and the study of the vocabulary demands of textbooks, the overlapping or duplication between courses or texts and similar approaches, are types of research which should be employed much more frequently by field workers than is the practice.

Of very practical value, if interpreted and conclusions are applied intelligently, is research aimed at discovering at the outset of a course or a unit thereof, what background of information or skills related to the course or unit the students of the class possess, both for the purpose of adjusting emphasis upon and selection of instructional materials and for the purpose of individualized instruction. Of a similar nature is remedial testing which is of the nature of research and which involves great skill in test construction and considerable caution in the interpretation of results, due to the fact that conclusions are based upon small portions of the test rather than upon the whole.

FIELD RESEARCH IN THE AREA OF METHODS OF TEACHING

Two principal types of approach are employed in the study of instructional methods. Used less frequently, because of the small amount of light shed upon the relative effectiveness of techniques, is the survey of practices. On the face, apparently quite simple, the survey method based upon questionnaire data is very "tricky," being subject to probability of serious error due to one or more of such causes as the following: (a) selectivity of the sample of teachers replying; (b) the accuracy of teachers' memory or judgment as to how frequently or for what purpose they employ given techniques and of the success with which they are employed; and (c) the difficulty of combining into single measures of frequency such categories as "never," "rarely," "occasionally," "frequently," "regularly," and "always."

The survey by means of observation or stenographic report not only requires expert observers trained in the technique of devices for recording

what they see and hear, but is quite expensive if applied to many teachers over sufficient periods of time to furnish an adequate basis for generalizations.

The controlled experiment has not fulfilled the expectations of its proponents a decade ago. In the first place, the equating of pupils in small experimental groups cannot be done with any certainty of accuracy—there are no known prophetic factors perfectly correlated with scholastic success, itself quite a whimsical phenomenon, and those most highly correlated may not be perfectly measured. "Chance" fluctuations in interest, industry, pupil-teacher relationships, and other factors tend to affect growth in achievement in such a manner as to obscure differences in effectiveness existing between different methods. For these reasons, where possible, large numbers of subjects should be employed, hundreds instead of dozens.

In the second place, the investigator must make certain that the teacher or teachers employing two or more methods to be studied must be equally skillful in the use of each—or that they will be as skillful as may be expected in the situation to which the experimenter would like to generalize his findings. He must also consider the possible effects of methods previously used with the pupils involved in the experiment—the carry-over in the form of attitudes, habits, skills, etc., likely to condition effect and achievement.

In the third place, the investigator is confronted with the problem of measuring growth during the experimental period. In practically all previously reported controlled experiments, the conclusions have turned upon measurements of growth or status in such directions as could be measured by written subject matter tests, usually highly factual and detailed. What may have been the relative effect upon concepts, relationships with life situations, and other fields of knowledge, ideals, attitudes, prejudices, and tastes; and upon skills, procedures, and concepts or ways of looking at things in borderline or completely different fields, or upon general powers or skills, we may only speculate.

Because of the baffling problem of how to measure growth in a given subject when material differences in extent and nature of courses of study exist, some problems, such as that of the relative efficiency of homogeneous grouping compared with differentiated instruction, do not submit readily to experimental methods.

In the fourth place, the research worker must recognize that the use of whatever units of measurement may be employed, whether reduced to

"standard scores" or "scaled units" or other likely-to-be-overestimated device (which implies that each unit or number of units is the equivalent of each other unit or equal number of units), is an approximation which renders any further statistical treatment useful only for obtaining good estimates better than non-technical methods but not mathematically accurate.

In the fifth place, the statistical technique necessary for salvaging what is meritorious under the handicaps necessarily imposed in the study of such problems is so often more complicated, involving many assumptions which should not be overlooked but allowed for, than any person except the best trained research workers is able to employ.

In the sixth place, the interpretation of coefficients of correlation, probable errors of estimate, and other measures of the efficiency of prediction is not as simple a matter as most researchers believe it to be, and as many statisticians of considerable repute report it to be.

In addition to all these limitations and needs for training and competency on the part of the researcher, there is the necessity for admitting that, after all, one may not assume confidently that the method apparently more effective for one teacher or group of teachers will be more effective for all teachers, or even for the majority of teachers or the same teachers with pupils of different age-levels, background, previous training, economic status, educational or vocational plans, intellectual curiosity or capacity, or for teachers of other courses of study, although very useful inferences from the experimental conditions to other situations may be facilitated by the knowledge derived from the experiment.

Many other types of problems related to instruction may be attacked by the controlled-experiment method, such as the relationship between attendance and scholarship, the use of work-books instead of notebooks or in addition to textbooks, and the effect upon achievement of different lengths of class periods, of differences in time of day for recitation periods, of number of class meetings a week, or of different lengths of school terms.

FIELD RESEARCH ON TESTS

With respect to problems of measurement, much research can be profitably done by teachers of limited training in advanced statistical methods. The reliability and validity of classroom tests may be studied by means of simple correlational and related methods. Item analyses of tests revealing the relative reliability, validity, and discriminative properties of individual test items and types of items may be made on any test.

However, in the first experience with this acitivity, careful guidance by a competent individual is very desirable—as is evidenced by the rather common error of validating tests in terms of the relation of the individual item to the total score of the test—a procedure most likely to eliminate items of unique nature and therefore of unusual value.

Space is not available here for the discussion of research related to discovering the degree of prophetic value possessed by various factors conditioning school achievement, as a basis for guidance, counselling, and sectioning. In addition to the statistics involved in controlled experiments and surveys, the prediction study involves a thorough knowledge of and skills in the techniques of multiple correlation.

TRAINING NEEDED FOR DIRECTING RESEARCH

It would seem to the author that except for the simpler surveys or studies, workers in the field should carry on research under the guidance of one fully trained in research and statistical methods. Such an expert would have mastered not only the techniques of advanced statistical methods discussed in such texts as those by Garrett, Holzinger, Kelly, and Odell, but also should be familiar with the current literature on experimental and statistical procedures. Such a person should be familiar with the better researches in at least the field to be investigated. He should be well acquainted with the rapidly developing means of measuring growth in character, personality, attitudes, interests, problem-solving abilities, etc., as well as in factual school achievement. He must be one of sufficient logic to interpret accurately the statistical products of investigations and to indicate their meaning for educational practice.

Under the leadership of such individuals, at least one of whom should be employed to guide research in every large school system, teachers in service may participate in educational research to excellent advantage to themselves, their pupils, and to their profession. When that time arrives when school administrators have training comparable to that of physicians and attorneys, i.e., six to eight years above the high school, perhaps every administrator may direct useful research.

The classroom teacher of tomorrow, as does indeed the adequately trained teacher of today, will possess the equivalent of the typical mastery of information concerning and skills in research, statistical methods, and measurement such as the average student acquires from ten quarter hours of resident study distributed over these associated fields.

At present, enthusiasm has far outstripped capacity for research, and much wasteful effort results in erroneous misleading conclusions. With

a "lick and a promise" at professional training, usually a minimum of fifteen to twenty semester hours of professional training, teacher training institutions are furnishing as "standard equipment" inadequate training in research procedures. Realizing that even in work for the M.A. or M.S. degree, adequate training in research cannot be given to all students, many institutions have sensibly abandoned the traditional requirement of a research thesis—a practice which has bloated periodicals with studies of little value and has operated to give many novitiates an altogether false notion of their competence to do research.

Under the leadership of a properly trained individual, teachers may not only discover facts, principles, and trends which will be of service to themselves and to others, but will develop the ability to read research reports intelligently and discriminatingly. Even in cases where the research techniques are faulty and erroneous conclusions reached, as well as in projects more wisely done, the participating teacher is certain to be stimulated to do very valuable reading and thinking with respect to the experimental problems involved, and the associated issues and areas.

The School Survey As a Means of Training Field Workers in Education

Jesse B. Sears
Stanford University

This statement is offered in answer to the question: How can the school survey be used as part of a worth-while training-in-service program for school workers?

It will be assumed here that the survey in question is required for the management of the school, that the training value is to be a by-product of the work, and that those who participate do so for the contribution they can make to the survey first, and second, for the training they may obtain.

There are many kinds of surveys. First, the self-survey and the survey by outside experts. Inevitably school workers would contact differently with the two types. Second, there are comprehensive or all-embracing surveys, and partial surveys, the one covering every possible school problem, the other only problems connected with a part or a phase of the system. Here again, opportunity for workers to serve would vary with the type.

For purposes of this discussion a comprehensive survey, in charge of an outside staff will serve best, because in a general survey opportunity

for training would be greater, and the self-survey will seldom if ever be a complete general survey, except in smaller school systems. It will be assumed also, that the survey contract provides for as large participation of the local staff as is consistent with the good of the schools and the scientific accuracy of the survey findings. Further, the survey used will call for consulting and directing service from the outside staff for one year from the date on which the report is received by the board. Finally, it will be assumed that the survey is welcome to the school workers and not brought in to settle feuds or to find excuse to "fire" someone, in which case opportunity for training would be nil.

What constitutes training opportunity is important to note also. Since participation will involve use of the worker's time, it is clear that the board must have value in return for any loss of effort from the program for which it is paying. It would not pay to use teachers and principals in a survey merely to get survey work done. It might pay if such participation got better survey work done, and still more if it resulted in permanent improvement of the school staff. Improvement (training) of the staff may show results either specific or general, or both, and results may accrue at once, or later on. Training may affect attitudes, skills, or knowledges that pertain directly or indirectly to the work of the schools. To be worth striving for the training sought by this means should be reasonably specific and bear quite directly upon the work in hand or in early anticipation.

If training is to be undertaken as a partial function or as a by-product of a survey it should be planned somewhat in advance. There are two possibilities: First, workers will be called upon (as officials in the system) to provide certain information required in the survey—both for facts and for judgments; second, they may be used otherwise to assist in planning studies, in gathering and classifying data, and in bringing survey conclusions to bear in practice. The former type is necessary as part of the survey; the latter can be made worth-while, and for a good survey is in part a necessity also. Both provide opportunity to participate in the use of scientific method in solving school problems, if the workers are given responsible contact with the survey work, and both expose workers to facts and to opportunity to analyze and reason with and about facts and groups of facts as they bear upon their own school problems.

A survey faces its work as a problem, or as a group of problems, to be solved, and not merely as a task of inventorying. It asks: What are the educational needs of the community; does the present system meet these

needs; if not, what is required to adjust the system to the proper ends; is the community financially able to meet its school needs; and how can available resources be used to the best advantage? Answers to these questions call for the solution of many problems. The school needs of a community depend upon many facts about the school population, the adult population, the resources and occupations from which the people obtain their living, the standards of living, the levels of culture, the economic possibilities, and the physical surroundings. These facts have to be gathered, set in order, and interpreted, much as a physician interprets the combined meaning of facts about temperature, pulse rate, breathing, and laboratory test—findings concerning the plant, program, staff, and financing, and the processes and products of the schools as they are; similarly the survey deals with facts in establishing reasons for the prescription (the revisions proposed); and so it deals with facts as it begins to put this prescription to work in the schools.

To show how the school staff may participate, both as surveyees and as surveyors, some typical problems and investigations, drawn from the many types required in the various divisions of a survey, will be presented; and what appears to the writer as genuine training opportunities in handling them will be pointed out. Let it be assumed that the survey director will call upon the superintendent for the assistants needed, and that the superintendent will select such helpers from his staff with a view to placing them in positions to receive training while doing the tasks assigned.

Problem 1. Are the administrative functions of the system properly assigned? The general concern here is with the organization of the school staff, back of which is the question of organization of the instructional program itself, and the layout of physical facilities of the system. Intimately related to the problem is the question of whether the administrative services are being performed effectively.

To solve this problem in the survey, the procedure would be somewhat as follows:

a. At the central office a copy of the organization chart, a copy of the rules and regulations, the board's minute book, the salary schedule, principal's or teacher's handbooks if any, a map showing the schools or sections to which the various executives are assigned, and the various curricula will be consulted and checked against each other for definition of functions and of assignments of staff members. This would be done by outside workers.

b. Each executive in the system would be called upon to list the duties he or she actually performs, and a little later to fill out a form specially designed to bring out the nature of the line of cleavage between each executive and his superiors and subordinates, and his own attitude toward the plan. The object here is to determine what each officer thinks his assignment is, how he carries on under the assignment, his judgment of the rightness of the assignment, and his notion of how his assignment or work conditions could be improved.

Data from *a* and *b* would then be checked against each other. Here the worker (all executives) is a surveyee. He learns more about the nature of organization in general, more about the special organization of which he is a part, more about his place in the plan, and more about the nature of his own job. He learns by having to make a careful analysis of his own rights and duties, by identifying his own functions and the relationships referred to in the form, and by a thoughtful and responsible examination of alterations he would like to have made in his assignment or in any procedure, plan, program or routine involved in the exercise of his rights and the performance of his duties.

Problem 2. Similar learning situations are available in a survey in the study of curricula. Among studies of the curricula the writer has frequently asked each teacher for an answer to a series of questions bearing upon aim, content, and methods of each course offered, together with its position administratively in the curriculum, and the library support provided for the course, on the theory that here is the real curriculum, the one the teacher actually uses in her work with her class, not necessarily the printed one. Data from these forms are tabulated and then checked against catalog or curriculum requirements governing the administration of subjects and courses. The answers throw much light, too, upon the actual functioning of the library service.

Teachers have recognized this as one of the most challenging experiences they are confronted with in a survey. As in Problem 1, the learning here is as a surveyee, and comes from a thorough-going inspection and analysis of one's own purposes, procedures, and subject matter for each course. The teacher realizes that she is revealing her theory, as well as her practice, and that most all she says can be checked by the surveyor. A few shudder, but most teachers in the writer's experience have prepared most illuminating data and have recognized the exercise as of exceptional value in clarifying their own understanding of their work.

Problem 3. Development of spot maps for use in determining location of new plants, for evaluating the existing distribution of housing facilities, for studying such matters as transportation and other analyses of student population for use in curriculum development.

The data for spot maps are available in the offices of school principals on cumulative records. No one is so familiar with these records or the data they contain as are the principals and teachers. To have workers in pairs, one dictating, the other spotting the location on the map, is the common procedure.

At first thought this seems to be a simple bit of clerical routine. It is routine work in a sense, but it is a technique that can be used in many ways by any school or club or in many business, social, and charitable enterprises. If teachers have opportunity to apply the technique in two or three ways they can hardly fail to see the wide and varied uses that it can be put to in the school. Neatness and accuracy in the work are called for and the results are in themselves thought provoking for the teachers.

Other problems. There are many opportunities of these types in a survey. The preparation of age-grade, grade-progress, mental age-educational age tables are instructive to make; studies of student failures, student participation in social activities, student scholastic and career purposes, and student work loads are handled by techniques that are applicable beyond the specific case. Size of class data, students' marks, and teachers work load data can be gathered, classified, and tabulated by teachers. All of these would throw light upon the school and give the teacher or principal a more intimate understanding of the school's problems. Each teacher to advantage could make a careful inventory of what the library, the laboratory, the shop, the studio contains by way of support for her courses, and will profit greatly by an attempt to show what is lacking. This latter procedure is not exact measurement, is not highly scientific evaluation, but is very useful, since it reveals the actual conception that is directing the work of each class. This the survey expert can evaluate in the light of the theory of teaching and learning and curriculum making that ought to prevail. Surveys must use much of this type of measurement.

Ways for a staff to assist in a testing program are widely known and require only mention here. Much of the work of evaluating buildings by use of the score card, including arrangement but not interpretation of the data, can be done by teachers and principals. Data on the use of rooms and other plant space can be prepared and tabulated by teachers.

Data on density of population and on growth of population can be taken from city records and plot maps by teachers with but slight directions. Such studies as these of the physical and population facts will not only acquaint a teacher with the school plant and with how communities within a city grow and decline in population, but they will result in a broader understanding of the relation of the school to the general physical and economic forces as they are actually operating in the city. This is a type of knowledge of which teachers are generally assumed to be densely ignorant.

Still another valuable type of training is to be obtained when the findings of the survey are to be put to work. Here it is not, *may* the school workers help, they *must*. They first join the experts in a full and frank examination of the survey recommendations. Together a plan for action is evolved. This most likely will involve actual study of the literature on the problem. Then comes the action. Suppose substantial evidence of poor ability to read has been found among the high school or junior college students. What to do is suggested by the survey. This is studied for its practical possibilities and a plan of action developed—a class in remedial reading. The actual cases must then be isolated and their programs arranged to permit this study. A program of instruction must then be developed, to be followed by the teaching and later by checking results. This project can be made a real course of training for every member of a school staff, to say nothing of the intensive training of those who do the teaching.

It is easy to see what training possibilities open along other lines at this stage. The introduction of a new system of class marks, introduction of an extended health program, introduction of the principle of integration in a reorganized curriculum, introduction of an extended health program, introduction of curriculum chairmen in place of the old department heads as a plan of reorganization in the high school, introduction of a program of visual instruction, all these suggest endless opportunity for extensive study and develop a new spirit, as well as a broader and more thorough knowledge of the work in every way.

Brevity has required omission of detailed explanation of the survey problems, purposes, and procedures and likewise of the nature of the process of learning referred to. The reader will need to fill in many details, since these brief suggestions represent only a limited sampling of the possibilities of using survey work in a training-in-service program.

THE FIELD WORKER AS A COMSUMER AND PRODUCER OF RESEARCH

WILLIAM A. BROWNELL
Duke University

THE list of titles assigned to other contributors to this symposium is rather comprehensive. In view of this fact, the most useful function that can be performed by the present article is to fill in certain gaps, for a symposium of this kind must inevitably reveal gaps. It is too much to expect a series of separately prepared papers to treat adequately every important problem within its province, especially when that province is as large as is the one here under discussion.

Two thousand words are none too many to treat a single idea completely and convincingly. When two thousand words are divided among more ideas, the treatment can only be suggestive—little more than the statement of a position. Nevertheless, at whatever cost to detail and to force, two main ideas are to be presented in this article. One of these ideas has to do with the field worker as a consumer of research; the other, with him as a producer of research.

1. Curriculum reconstruction is probably the livest of current educational problems. Wherever the administrative and instructional staffs of school systems are not actively engaged in re-writing their courses of study and in re-examining their curricular offerings, they are at least being made uncomfortably aware of such efforts on the part of others.

For three decades, at an ever increasing tempo, the results of educational research have been accumulating. The sheer bulk of research literature is now in 1935 little short of astounding. The curriculum worker naturally turns to this vast storehouse of material for guidance in the solution of his problems,—naturally, because he has been led to expect help from this quarter. Has not a considerable part of his training been specifically devoted to building in him confidence in research and in what research will do for education?

The curriculum worker comes, then, trustingly to educational research, and what happens? (a) He may be disappointed to discover not a single investigation on the point of his interest. (b) Or, he may find one or perhaps two studies, which he accepts happily and the conclusions of which he uncritically incorporates into his revised curriculum. (c) Still again, he may, if he reads widely enough, discover a number of studies which report inconsistent and even antagonistic findings. What now?

Whose research is he to follow? Would that he had not been so ambitious! It would have been so much more satisfying to have stopped with the first study he found.[1]

In any event the curriculum worker has not solved his problem by locating relevant research. His obligation is not the one which is usually stressed, namely, that of translating research into school practice. He has a more fundamental obligation, that of first determining *what* research, or *which* research, if any, to accept. Laudable as it is in motive, his eagerness to advance the cause of science in education by honoring its products is apt to be harmful in its consequences. He may be guilty of fostering error, of perpetuating mistakes. All research is not equally good. It is not even all good. Some of it is misleading; and some of it is bad. The printed word, especially when supported, or better, accompanied, by tables, statistical constants, and graphs, still carries undeserved prestige. Uncritical acceptance of pseudo-research creates a demand for, and a supply of, more unscientific effort of the same kind.

The nature of pseudo-scientific research in education has been too frequently delineated to justify more than a passing word here. So far as the field worker is concerned, perhaps the most important caution relates to the interpretation of experimental results. Attention has been repeatedly called to the fact that the majority of educational studies are fragmentary; they deal with isolated problems. Even when such studies are technically accurate and when the findings are derived from data by approved statistical procedures, there remains the vital question, *What does the study mean?* The significance pointed out by the investigator himself is not always to be trusted implicitly. On the contrary, the investigator may be too close to his study to see it in proper perspective. After all, back of most serious research inquiries lies a question and a doubt, and associated with that doubt is some hypothesis. It is by no means uncommon for that hypothesis to pass over into bias which, even when wholly unconscious, may wreck the scientific worth of the study.

Yes, the field worker must be a cautious consumer of research. He will be the first to welcome valid research findings, but he will satisfy himself that the findings *are* valid. He will read *all* the research literature on his problem. He will recognize that each inquiry represents one attack upon the question and that many other attacks may be possible. He will critically scrutinize the data reported, not hesitating to leave the data

[1] One suspects sometimes that textbook writers in education have hit upon this happy expedient. This or that educational procedure is recommended on the basis of a single citation, others, perhaps better, being omitted,—or unknown.

themselves to weigh their theoretical and practical implications.[2] He will temper his enthusiasm for research and his faith in its ultimate contributions with a sympathetic appreciation of its limitations.

2. The first of the two ideas in this article, as previously stated, concerns the field worker as a consumer of research. The second idea concerns him as a producer of research.

Field workers in education are unquestionably right in insisting that research belongs by no divine right to professors of education and to graduate schools. They are right, too, in contending that since the main business of education is the teaching of children *in school* the place to do the major part of research is in the schoolroom, and the subjects to be used are typical school children. It follows then from these facts (for they *are* facts) that field workers will become increasingly important as producers of research.

It does not follow, however, that they should repeat all the errors which have lessened the value of previously done research. Among these errors are three which field workers would do well to avoid.

(a) The first of these errors to be avoided is the almost fanatical demand for objectivity in research data. It might just as well be admitted at the start that research techniques have yet to be devised which will yield objective measures on many needed problems relating to teaching and learning and to education in general. There are two ways out of this difficult situation. First, research can be restricted to studies which are based upon objective data. If this alternative is adopted, research problems will be limited to those that can be studied by objective techniques, and the kinds of data collected will be limited to those which can be accepted as objective. The second alternative is to study whatever problems are important and to secure whatever data are pertinent, regardless of whether they are objective or not.

The second of these alternatives seems to be the wiser. Vital educational problems must not be forever neglected because current research techniques yield no objective data thereon. It is a far better policy to learn all that can be learned about these problems, from whatever kind of data. If the search for these data supplies needed information, it is justified, whether the procedures employed do or do not fall within the category now defined as "scientific." Indeed, it is a not impossible result

[2] An excellent example of the need for just such a careful consideration of research, a consideration which carries the inquirer beyond the data of the studies reported, is found in Buckingham's recent critique of the experimental studies on the value of instruction in primary arithmetic. See: Buckingham, B. R. "When to Begin the Teaching of Arithmetic," *Childhood Education*, XI (May, 1935), pp. 339-43.

of such studies that the definition of research will have to be widened to include techniques not now regarded as respectable. Nor is it impossible that such studies will reveal techniques not as yet known, except as a *need* for them is known. On the other hand, whether or not such results accrue is a matter of less immediate significance than that some basis be found for dealing with the many educational problems confronting the school.

(b) The second common research error which field workers should avoid is excessive use of the controlled-group technique. In research by this technique one group of children is selected to be taught by Method A, and another group, equated with the first in essential respects, is selected to be taught by Method B. The comparative merits of Methods A and B are established from the relative gains of the two groups under instruction.

The crucial feature of this technique is that of *control*. All factors which can influence the experimental data must be known, and they must be controlled, or if they are not controlled, allowance must be made for their variable influence. This is the *theory* of the technique. The practice is something else again, for it is indeed rare that the theoretical conditions are more than approximated. Many times the discrepancy between theory and practice becomes so great as to make the reported findings wholly untrustworthy.

Recently, writers on educational research have become more critical of the controlled-group technique. They are now, no less than formerly, convinced of the value of this experimental procedure, but are steadily more skeptical of its general practicability. To be controlled, factors must be known, and the simple truth is that these factors are not now known. Until they are known, there would seem to be more profitable ways in which to invest research effort than in controlled-group experimentation. One of these more profitable ways is in the discovery of the factors themselves.

(c) The third error is one of omission rather than one of commission. Charles H. Judd has often suggested the value of a relatively simple type of research which, perhaps because of its very simplicity, has thus far escaped serious consideration. This is the collection, classification, and analysis of teachers' experiences in the classroom.

Here is a research technique of peculiar promise to the field worker who desires to produce as well as to consume research. He has access to the teachers; he has intimate contacts with the classroom; he can readily check teachers' opinions and observations by going directly to the chil-

dren at work. He needs only properly to appraise the richness of his opportunity.

Teachers day after day deal at first hand and in a practical manner with the very problems set for more academic research. It is ridiculous to assume that none of these teachers arrives at solutions or attains insights of consequence beyond the walls of the school room, and yet the common neglect of their experiences amounts, in effect, to the acceptance of such an assumption. It is far more reasonable to suppose that many of them have worthwhile contributions to make, and that these contributions have merely to be collected, evaluated, and passed on, to be recognized for their general worth. The field worker could concern himself with research problems and with research methods of far less probable merit.

Concluding statement.—This article has been devoted to but two ideas. The first is a caution to the field worker, to make himself a critical rather than a credulous consumer of research. The second is intended to make the field worker a wiser contributor of research, by encouraging him to utilize non-objective data when such data are helpful, by warning him against the attractiveness of the controlled-group method of experimentation and its spurious simplicity, and by suggesting a penetrating type of research technique which promises rich returns.

The Possibilities of Historical Research

H. G. Good
Ohio State University

To learn from history means to learn from recorded experience. The record is incomplete and otherwise defective from several causes. The making of records requires time, money, and wisdom. So does their preservation. The records of one of the most illustrious of all our state school officials were taken out of the State House by a successor in the office and burned—perhaps, because they were out of date! And records must be made available if they are to be useful. Other factors are involved. Each age records: (1) what it considers to be of interest or value, (2) what it has the eye to see, and (3) the will to make known. No age is able to anticipate very completely the questions to which following ages will seek the answers. We cannot make new records of past events and conditions, and therefore we must learn from such records as we have.

History is an empirical study. We do not give laws to the facts, but we derive generalizations from them. The student of history is not only

unable to manufacture records; he is also unable to manipulate experience. He gathers data industriously, of course, but also resourcefully, noting particularly any facts which might tend to controvert his preformed views, all unpleasant and unwelcome evidence, scrutinizing any discrepancies and disagreements, and keeping a sharp eye for circumstances previously unnoticed or neglected. He looks not only for facts but for clues. Facts must lead to ideas. He must respect the facts, but in themselves they are blind. He must draw conclusions, because he aims not at knowledge merely, but wisdom. "What we need to know, for most purposes, is not what happened in the past, but what may be expected to happen in the future."[1] Of this latter kind of knowledge, one important source is correct ideas of the past. In order to develop correct ideas of the past we must find the appropriate records; and then we must learn to read them. After this short excursion into the field of criticism this paper will now consider the two divisions of historical research named in the last sentence.

The history of education as a practical pursuit seeks to answer three somewhat distinct kinds of questions. They are the following:

1. The question of evolution. How did progressive education arise and develop? We seek to establish trends.

2. The question of resemblance. How is education in Denmark like that of Italy, and how unlike? We institute comparisons.

3. The question of value. Why should the chief state school officer be chosen by a lay board rather than by popular election? We find causes and reasons.

These are the objectives of historical study. Before we search the record we must define our terms and frame specific, significant and answerable questions.

In this analysis we are to attend not to the subject matter of the given questions but to the three forms. We are to see that there are tracing questions, how out of one thing another has grown. The question about progressive education is such a question. Another example is in order. Secondary education from the ancient Greeks to the present has a trunk line development that has now spanned more than twenty centuries. Nourished by great institutions, fed from the noblest thought and learning and also the practical experience of mankind, it has had a remarkably

[1] Drake, Durant. *Invitation to Philosophy.* (Boston: Houghton Mifflin Co., 1923), p. 67 *et passim.*

continuous history. There are questions of comparison. It is a familiar fact that we are all provincial and do not understand what is too familiar. We can understand our own practices better by comparing them with different procedures and by looking on them from an outside vantage-point and in a larger setting. How can we learn to understand the advantages and the dangers of a local, distributive system such as we have in the United States, one at many points subject even to personal whims, except by comparing it with a national, integrated and centralized system such as that of France or Japan? And there are questions of evaluation, how one may judge that for one purpose or another, this is better than that. Such questions are referred to experience, that of many men or of all men. Life teaches. Only, we must not arbitrarily give life too narrow a scope. Why should the chief state school official be appointed by a lay board? For an answer we may ask a good administrator. And if we have to catch a train that may be the best plan. But how do we know that he is a good administrator and how does he know the answer to the question? Experience, the experience of the United States since the establishment of the New York Board of Regents, and beyond that the experience of mankind as it is found in the record.

Before we can examine the record intelligently we must come to it with a problem. What problem? We shall take the first one above for an example. How did progressive education arise and develop? Any selection, and therefore this one, immediately involves us in a definition. What is progressive education? More than likely we do not exactly know; but we must begin and therefore we shall assume, tentatively and for the present, that progressive education is that complex of theories and practices which sets a child, that is an inquiring learner, in the midst of society and the world and says, "Whatever ye do, do for him"; which says that the school, if there is a school, exists for the child as he now is; which says that education is growth and life and that learning is involved in these; which demands for growth and life a rich and well-organized material and social environment in which teachers and children learn with and from each other by inquiring, discovering, making, sharing, and enjoying. That is progressive education for us, just now. Where did it come from?

A little examination will show that there are at least four elements in this definition. There is the element of general educational theory. We might start with "the mother school" of Comenius. Many ideas also come proximately from Rousseau through Pestalozzi, who in turn furnished the starting-point for two great complementary writers, Herbart and Froebel.

All these, and especially the last two, have been criticized and partially caught up in the current restatements of Dewey who is, however, strongly influenced by a pragmatic philosophy and by his interest in social institutions, especially industrial and democratic institutions. In so far as progressive education is to be studied in the writers, we must go first to these and then to others more remote from the main line. Everywhere we must select the pertinent elements and reject those which do not belong to the tradition which we are studying.

And there is the psychology of childhood which discloses a child who is not a blank sheet of paper for teachers to write upon, as Locke had it, or the empty pitcher to be filled, of Dickens' satire, but an organism with impulses, appetites, a thirst for knowledge and life, and purposes. Childhood implies capacity for growth; maturity, a corresponding social deficiency, for it often connotes an unwillingness to make new adjustments. When, not so long ago, the small child began to come into the school and his social and mental immaturity became apparent, the problem of education was presented in more extreme terms than ever before. Here again Comenius made a beginning; and perhaps the wisest of all Rousseau's words was the phrase: "Begin by making a careful study of your children for it is clear that you know nothing about them." It is equally clear that child study and genetic psychology are important elements in the development of progressive education.

In the third place progressive education demands a rich environment of gardens, shops, school theaters, studios, printing presses, laboratories, and equipment of every kind. It is a fascinating task to trace how invention has made possible an educational environment which, as Dewey says, is not only for listening but also for doing. How society has furnished the materials to enrich the school and how the school has gone out into the world is all a part of the story.

And there are the progressive schools and their practices. Perhaps we should begin with Vittorino who decorated the walls of "La Casa Giocosa," the Joyful House, with frescoes of children at play and who played with his children. The infant school movement of the last century, Keilhau, whose famous pupil, Georg Ebers, has left an invaluable record of Froebel's first school, the Kindergarten, the English Hazelwood of Thomas Wright Hill and his famous sons, must be considered. The Abbotsholme of Cecil Reddie was founded in 1889. Its lineage can be clearly traced; and its descendants are Bedales, the *Landerziehungsheime* of Germany and the *École des Roches* of France, all of which, if not

modelled on Abbotsholme, were certainly inspired by it. Dewey's small school in Chicago (1896), the Francis W. Parker School in the same city (1901), Meriam's Elementary School at Columbia, Missouri, (1904) are American examples; but Felix Adler's Workingmen's School in New York (1880) and the resulting Ethical Culture School had many progressive features from the beginning.

These four elements must certainly be studied if we wish to know how progressive education has come to be. Nor should we omit the influence upon education of science, of the humanitarian impulse, of democracy as an ethical ideal, of industry, and the influence upon the education of normal children of the study and education of mental and sensory defectives. All have made contributions to progessive education. Beyond these contributing factors there is an extensive criticism of progressive education which is a part of the movement and the record.

Some of the sources for a study of the development of progressive education are evidently accessible in books and magazines. That much has been indicated by the titles and names already given. Use the *Readers' Guide*, *Education Index*, biographical dictionaries, general reference works, and files of the magazine, *Progressive Education*. Use the most general sources first, even textbooks, summary as they are, to get leads; but turn away from them as rapidly as possible to special and original sources. Make your bibliography as you go on, including both titles you have examined and those you will examine later. Much can be done by wise browsing in likely areas in a university library. That is how we secure the previously neglected and unnoticed facts. Recent institutional developments and current practices may be obtained from those actively participating in the movement.

It is not the best plan in most subjects to attempt a large, certainly not an exhaustive, bibliography at the start. We should begin with a few sources, take notes from them, providing carefully for adequate documentation, and gather new sources as we proceed. The notes should contain at least three kinds of materials: information on the subject with the references, leads for further information, and ideas, the things suggested by your investigation. Do not trust to memory. Nobody has a good memory in historical investigation.

Having found some sources and gathered some materials, how shall we read and evaluate them? That demands two kinds of qualifications, technical and philosophical. By technical qualifications we mean ability to judge the accuracy of a report from internal and external evidence,

ability to detect bias and to criticize it, to find corrective and amplifying sources. Every teacher knows how difficult it is to develop sound critical sense in students. How they love to repeat what they have read or have been told, just as they have read and heard it. There is, of course, not only credulity but also occasional hypercriticism. Both are to be avoided. Sound criticism demands open-mindedness, intelligence, information, and patient thought and investigation. By philosophical qualifications is meant that every investigator must have a position of his own, a considered view of education on the basis of which he judges. In progressive education there are several varieties: the lunatic fringe which showed itself, to take a distant example for safety's sake, in Hamburg, Germany, after the World War; the merely diplomatic, half-unwilling kind; and the enthusiastic but critical and well-informed variety. Every historical writer on this or any other subject must interpret; and his interpretation will have more value if he has a conscious and deliberately formulated standpoint and philosophy.

What topics shall we study? There are many considerations. The aim of investigation is to present something that is new and sound and important. The question chosen should be one in which the investigator has a vital interest and for whose study he already has or can secure the necessary qualifications. Only one who has sufficient knowledge of mathematics and of education should undertake to write on the history of mathematics teaching. If the investigation is to be published,—and the investigator should aim at publication,—it must be one for which there is a public. The question must be one for which there is available material that has not been used or that needs to be re-interpreted.

We need: a study of the transition from private to public education, including the American academy; a study of the development of concrete and objective teaching; a study of developing curricula, facilities, and methods in the teaching of science, the practical arts, the commercial field, and other subjects; a history of child care and education, and the whole attitude toward children in the United States and the world; a history of education in Nazi Germany in contrast to Republican Germany; a history of educational marking and measurement; indeed, this list could be lengthened indefinitely. But most investigators will do better by taking a small topic, the history of the local high school for example, until the time when they will no longer need advice. With all the writing that has been done, however, our ignorance of educational development is still at many points both extensive and profound. There is no lack of subjects for investigation.

EDITORIAL

THE FIELD WORKER AND PROBLEM SOLVING[1]

With the great increase in graduate study and in educational literature of a factual nature, the time is probably well past when most teachers and administrative officers looked upon research as an activity closely akin to magic or sleight of hand. It has come to be rather generally recognized, at least among the better-trained workers, that research is simply the pursuit of truth as a basis for making decisions, and involves essentially the same steps as problem solving or sound thinking.

Likewise, the question of whether properly trained field workers should engage in research is hardly debatable, since they have available the typical classroom and school conditions to which the results of most educational investigations supposedly are to be applied at some time. Other reasons for encouraging scientific problem solving in the field, rather than to reserve this function exclusively for graduate schools, psychological laboratories, and research bureaus, concern the intellectual and professional stimulation of a million teachers, administrators, and supervisors in this country, identification of important problems for study, and ready application of the results of research. If the emphasis on pupil activity in attacking problems, which has gained a great deal of headway in the elementary school within recent years, is sound, certainly the same principle of learning should apply with at least equal validity to the teachers themselves.

It is granted that much remains to be done by way of adequately training field workers in their pre-teaching and in-service programs to attack their problems scientifically. It is also true that an ideal balance between investigational procedures and other elements in the training program probably has not yet been discovered and certainly has not been effected in practice. Possibly too much time has been spent in debating whether separate graduate degrees should be given for proficiency in teaching, in administration, and in research, or in determining the label (M.A., M.S.,

[1] The point of view presented here is amplified at some length in: Good, Carter V., Barr, A. S., and Scates, Douglas E. *The Methodology of Educational Research* (Experimental Edition) (Ann Arbor, Michigan: Edwards Brothers, 1935), Chapter XV.

Ed.M., Ph.D., Ed.D) to be used at the completion of a given period or program of graduate instruction. It would seem more profitable for graduate departments of instruction to be primarily concerned with a desirable balance between teaching (or administrative, or supervisory) activities and problem-solving procedures appropriate to the given area, so as to prepare the worker for this important dual role and obligation.

Granted that the field worker is reasonably well prepared by virtue of his training to attack a number of his most pressing problems, expert technical supervision and direction are still necessary to secure the best results. Bureaus of research in city systems, state departments of education, and in higher institutions, as well as the staffs of graduate departments of instruction and the best trained supervisors and administrators are doing much to direct and coördinate the research efforts of teachers in service.

It is recognized that many field workers are handicapped in attacking their problems scientifically by obstacles in the form of heavy teaching or administrative loads, or by lack of facilities for research. However, the worker with a truly scientific spirit, whether in astronomy, physics, medicine, invention, exploration, or education, is possessed by a consuming intellectual curiosity which frequently drives (or leads) him forward in the search for truth, in spite of physical discomforts and lack of material facilities.

—Carter V. Good

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

SELECTED BIBLIOGRAPHY ON THE METHODOLOGY OF EDUCATIONAL RESEARCH AND RELATED PROBLEMS, 1934-35

CARTER V. GOOD
University of Cincinnati

This is the sixth annual bibliography on the methodology or techniques of educational research to be published in the *Journal of Educational Research*. It covers a twelve-months' period from approximately July 1, 1934, to July 1, 1935. The preceding annual bibliographies on the same subject may be found in the issues for October, 1930; September, 1931; October, 1932; September, 1933; and September, 1934.

Under the first heading of the bibliography are found an unusually large number of references dealing with historical resumes of progress made, current developments, present status, trends, predictions of future developments, etc., covering a wide variety of areas and problems, including elementary education, secondary education, the junior college, psychology, mental hygiene, methodology, the school subjects, measurement, guidance, contruction of school buildings, etc. Evaluations of numerous areas and procedures are included under this heading: courses of study, textbooks, the activity curriculum and progressive education, accrediting standards, the guidance program, learning theories, educational theory, measurement of achievement, and research in the school-subject fields.

A second subdivision includes a number of analyses which suggest problems for investigation dealing with: school administration, educational finance, guidance, student personnel, the textbook, special method and the psychology of the elementary school, English, health and physical education, secondary education, the junior college, sociology, delinquency, mental hygiene, psychology, and research needed in a particular state.

Under the third heading, as in other years, the bibliographical and summarizing aids listed include rather frequent reference to the *Journal of Educational Research*, *School Review*, *Elementary School Journal*, *Review of Educational Research*, *Psychological Bulletin*, bulletins of the United States Office of Education, abstract volumes of graduate studies published by higher institutions, educational handbooks and directories, etc.

The most comprehensive works under the fourth subdivision are the yearbook on *Educational Diagnosis* of the National Society for the Study of Education, Demiashkevich's *An Introduction to the Philosophy of Education*, Kramer's *A First Course in Educational Statistics*, Peters and VanVoorhis' *Statistical Procedures and Their Mathematical Bases*, Lincoln and Workman's *Testing and the Uses of Test Results*, Symonds' *Psychological Diagnosis in Social Adjustment*,

Tyler's *Constructing Achievement Tests*, Warren's *Dictionary of Psychology*, Young's *Interviewing in Social Work*, and Good, Barr, and Scates' *The Methodology of Educational Research*.

Among the last group of references, those interested in the training and guidance of research workers and graduate students will find Gee's *Social Science Research Organization in American Universities and Colleges* and John's *Graduate Study in Universities and Colleges in the United States* quite suggestive.

I. Characterization and Evaluation of Research and Educational Procedure

Barr, A. S. "On the Timeliness of Research," *Journal of Educational Research*, XXVIII (September, 1934), 49-52.

Barton, J. W. "Trends in the Junior College Curriculum," *Junior College Journal*, V (May, 1935), 405-18.

Bode, B. H. "The Next Step in Elementary Education," *Education*, LV (May, 1935), 513-17. Emphasizes that education means the continuous reconstruction of experience, so as to make the school an instrument of social progress.

Breed, F. S. "Is a Science of Education Possible?" *Scientific Monthly*, XXXIX (December, 1934), 530-35. Urges that education be placed on a scientific basis, thus escaping the stagnation of traditionalism and the uncertainties of radicalism.

Briggs, T. H. "A Philosophy of Secondary Education Today," *Teachers College Record*, XXXVI (April, 1935), 593-603.

Bruner, H. B. "Outstanding Courses of Study of 1934," *Society for Curriculum Study News Bulletin*, VI (January 15, 1935), 2-8.

Cassidy, Rosalind, and Others. "Physical Education Trends and Progress," *Journal of Health and Physical Education*, VI (February, 1935), 14-21, 62.

Dashiell, J. F. "A Survey and Synthesis of Learning Theories," *Psychological Bulletin*, XXXII (April, 1935), 261-75.

Dewey, John. "The Need for a Philosophy of Education," *New Era*, XV (November, 1934), 211-17.

Douglass, H. R. "Three Hundred Years of Method in the Secondary School," *Educational Administration and Supervision*, XXI (May, 1935), 321-33.

Everett, Samuel, and Others. *A Challenge to Secondary Education:* Plans for the Reconstruction of the American High School. New York: D. Appleton-Century Co., 1935. Pp. viii + 354.

Frederick, R. W. "Future Trends of the High School," *Curriculum Journal*, VI (May 22, 1935), 16-19. Lists 36 trends.

Freeman, F. N. "An Analysis of the Basis of the Activity Curriculum," *Elementary School Journal*, XXXV (May, 1935), 655-61.

Gans, Roma. "Evaluation of the Work of the New School," *Education*, LV (May, 1935), 530-34. Lists 12 questions to be answered in this evaluation.

Grizzell, E. D. "A Nation-Wide Study of Standards for Secondary Education," *Junior-Senior High School Clearing House*, IX (December, 1934), 241-42.

Harap, Henry. "A Survey of Courses of Study Published in the Last Two Years (1932-34)," *Journal of Educational Research*, XXVIII (May, 1935), 641-56.

Henmon, V. A. C. "Recent Developments in the Study of Modern Foreign Language Problems," *Modern Language Journal*, XIX (December, 1934), 187-201.

Holmes, H. W. "The Philosophic Element in Scientific Method," *School and*

Society, XLI (January 12, 1935), 41-48.

Hopkins, L. T. "Exploring New Areas of Measurement," *Curriculum Journal*, VI (May 22, 1935), 22-25.

Hughes, W. H. "Two Educational Philosophies — Are They Compatible?" *Nation's Schools*, XIV (December, 1934), 25-28. Stresses that the "new" school will provide for individual differences and that measurement will develop in the field of personality rather than be discarded.

Hunt, W. A., and Landis, Carney. "The Present Status of Abnormal Psychology," *Psychological Review*, XLII (January, 1935), 78-90. An analysis of 15 textbooks in this field, 7 psychiatric texts, of teachers and research workers in abnormal and experimental psychology, and of experimental literature from 1929-33 inclusive.

Hutson, P. W. "Testing the Guidance Program," *Nation's Schools*, XV (June, 1935), 21-23.

Jablonower, Joseph. "Mathematics Teaching in the Next Ten Years," *Progressive Education*, XII (May, 1935), 338-41.

Lathrop, Edith A. *Aids in Book Selection for Secondary School Libraries*. Office of Education Pamphlet No. 57, 1934. Washington: Office Education, 1934. Pp. 28.

McConn, Max. "Educational Guidance: Progress Towards Scientific Procedures," *School and Society*, XL (October 27, 1934), 537-42.

Maller, J. B. "Forty Years of Psychology," *Psychological Bulletin*, XXXI (October, 1934), 533-59. An analysis of American and European publications in psychology, 1894-1933.

Monroe, W. S. "Hazards in the Measurement of Achievement," *School and Society*, XLI (January 12, 1935), 48-52.

Noffsinger, F. R. "A Century of Progress in Schoolhouse Construction," *American School Board Journal*, LXXXIX (December, 1934), 39-40; XC (January, March, April, 1935), 21-22, 37-38, 36.

Noffsinger, F. R. "A Century's Progress in School Heating and Ventilation," *American School Board Journal*, XCI (July, 1935), 38-39.

Noffsinger, N. G. "One-Third of a Century of Progress," *Junior College Journal*, V (May, 1935), 395-404. Deals with the junior college.

Osburn, W. J. "An Outlook for Educational Research," *Journal of Educational Research*, XXVIII (April, 1935), 623-25. Discusses so-called "atomistic" and "organismic" research.

Proctor, W. M. "Trends in Pupil Guidance," *California Journal of Secondary Education*, X (January, 1935), 113-17. (1) Final vocational decisions not made in the junior high school; (2) increased emphasis on non-vocational phases of guidance in the junior high school; (3) relegation of vocational courses to the eleventh and twelfth grades and to the junior college; (4) correlation of school program and industry; (5) guidance for increased leisure; and (6) emphasis on social engineering.

Roemer, Joseph. "Proposed Revisions of Secondary School Standards," *High School Teacher*, XI (May, 1935), 132-34.

Rugg, Harold. "After Three Decades of Scientific Method in Education," *Teachers College Record*, XXXVI (November, 1934), 111-22. Evaluates the progress made.

Ruggles, A. H., and Others. "Twenty-fifth Anniversary Celebration of the National Committee for Mental Hygiene," *Mental Hygiene*, XIX (Jan-

uary, 1935), 1-37. A series of articles showing developments and trends in this field.

Seates, D. E. "Types of Assumptions in Educational Research," *Journal of Educational Psychology*, XXVI (May, 1935), 350-66.

Sears, J. B. "Technique and Procedure for Surveying the Curriculum," *California Journal of Secondary Education*, X (January, 1935), 123-31. Suggests ways for discovering weaknesses in the curriculum.

Smith, Dora V. "The Contributions of Research to Teaching and Curriculum-Making in English, January, 1933, through June, 1934," *English Journal, College Edition*, XXIV (May and June, 1935), 363-74, 451-61.

Tyler, R. W. "Evaluation: A Challenge and an Opportunity to Progressive Education," *Educational Record*, XVI (January, 1935), 121-31.

Tyler, R. W. "Evaluation: A Challenge to Progressive Education," *Educational Research Bulletin*, XIV (January 16, 1935), 9-16. Emphasizes the need for setting up appropriate objectives and adequate methods for attaining them, as well as measuring the extent to which the goals are achieved.

Updegraff, Harlan. "Progress in American Public Schools, 1920-30," *Nation's Schools*, XIV (August, 1934), 17-20.

Waterman, I. R., and Melbo, I. R. "A Plan of Procedure for the Evaluation of Textbooks in Reading" *Elementary School Journal*, XXXV (May, 1935), 662-74.

Wheeler, R. H. "A Set of Postulates for Educational Theory, I: The Background," *Journal of Educational Research*, XXVIII (January, 1935), 321-33.

Wilson, G. M. "Research: Suggested Standards for Summarizing and Reporting Applied to Two Recent Summaries of Studies in Arithmetic," *Journal of Educational Research*, XXVIII (November, 1934), 187-94.

Wilson, Lucy L. W. "Three Hundred Years of Education for Girls in America," *School and Society*, XLII (July 27, 1935), 105-11.

Woody, Clifford, and Others. "A Symposium on the Effects of Measurement on Instruction," *Journal of Educational Research*, XXVIII (March, 1935), 481-529.

Wren, F. L. "A Survey of Research in the Teaching of Secondary Algebra," *Journal of Educational Research*, XXVIII (April, 1935), 597-610.

Zirbes, Laura. *Curriculum Trends:* A Preliminary Report and a Challenge. Washington: Association for Childhood Education, 1935. Pp. 40.

Zook, G. F. "Accreditation of Secondary Schools in the Light of the North Central Report," *Educational Record*, XVI (January, 1935), 70-81.

"The Activity Movement," *Progressive Education*, XI (October, 1934), 327-59. A symposium based on the "activity" yearbook of the National Society for the Study of Education.

"The Conclusions and Recommendations of the Commission on the Investigation of the Social Studies in the Schools," *Social Studies*, XXV (October, November, 1934), 279-94, 343-49. A series of reviews of this report.

"The Nature and Purpose of Social Research," *Sociology and Social Research*, XIX (July-August, 1935), 540-44.

II. Problems and Issues: Needed Research

Ashbaugh, E. J. "Research in School Administration," *Journal of Educational Research*, XXVIII (September,

1934), 48-49. Suggests a type of research needed in this field.

Breed, F. S. "Special Methods in the Elementary School: Problems and Methods of Research," in "Methods and Technics of Educational Research," *Review of Educational Research*, IV (February, 1934), 29-35. Lists problems for research related to methods in the elementary school.

Briggs, T. H. "Research in Secondary Education," *Junior-Senior High School Clearing House*, IX (December, 1934), 198-205. Lists 35 problems for research in this field.

Carpenter, W. W. "Problems in Junior College Education," *Junior College Journal*, V (October, 1934), 13-15. A list of problems for investigation.

Chapman, O. L. "Six Problems in Education," *Nation's Schools*, XIV (December, 1934), 17-18. Restatement of objectives, revamping of tax systems, district reorganization, teacher training, public relations and education of public to program of school, and planning for the school plant.

Cole, Luella. *Psychology of the Elementary School Subjects*. New York: Farrar and Rinehart, 1934, pp. 291-319. Problems for investigation in elementary education.

Duncan, H. G., and Winnie L. "Research Interests in Sociology," *Sociology and Social Research*, XIX (May-June, 1935), 442-46. Based on the census of research projects published annually in the *American Journal of Sociology*, 1928-1934.

Ellwood, C. A. "The Fundamental Research in Educational Sociology," *Journal of Educational Sociology*, VIII (September, 1934), 4-11. (1) Can public spirit, democracy, social intelligence, and social attitudes be taught in the schools? (2) Through control of learning situations, can any desired type of society be produced? (3) Can the experience of the past, the wisdom of age, and the lessons of history be imparted to youth and future generations?

Good, Carter V. "Doctors' Theses Under Way in Education, 1934-1935," *Journal of Educational Research*, XXVIII (January, 1935), 376-99.

Hincks, C. M. "The Next Quarter Century," *Mental Hygiene*, XIX (January, 1935), 69-77. Suggests a program for further work dealing with problems of mental hygiene.

Jones, V. A. "Fields of Instruction and Research in Psychology as Represented by Members of the American Psychological Association," *Journal of General Psychology*, X (January, 1934), 211-14.

Kefauver, G. N. "Proposals for a Program of Evaluation of Guidance," *School Review*, XLII (September, 1934), 519-26.

Lundberg, G. A. "Current Research Projects (Sociology): Report of Research Census of 1934," *American Journal of Sociology*, XL (September, 1934), 221-39.

Mort, P. R. "A Forecast of Future Research in Financing of Education," in "Finance and Business Administration," *Review of Educational Research*, V (April, 1935), 165-70.

Norton, J. K. "Ph. D. and Ed. D. Adventures in School Administration," *Teachers College Record*, XXXVI (December, 1934), 207-12. Outlines criteria for selecting problems and suggests areas for research.

Olson, W. C. "Needed Research in the Prevention of Delinquency," *University of Michigan School of Education Bulletin*, VI (April, 1935), 102-3.

Osburn, W. J. "What Next in School Administration?" *Educational Administration and Supervision*, XXI (February, 1935), 107-14.

Smith, Dora V. "Diagnosis of Difficulties in English," *Educational Diagnosis*, pp. 265-67. Thirty-fourth Yearbook of the National Society for the Study of Education. Bloomington, Illinois: Public School Publishing Co., 1935.

Strang, Ruth. "Health and Physical Education," in "Special Methods and Psychology of the Elementary-School Subjects," *Review of Educational Research*, V (February, 1935), 53. Lists features for a program of research.

Strang, Ruth. "Research Issues in Student Personnel Work," *Personnel Journal*, XIII (August, 1934), 101-105. (1) A cursory survey of a mass of students versus a careful analytical study of individuals. (2) A cross section, or snapshot picture, versus a developmental study of individuals over a long period of time. (3) A study of end-results alone versus observation of the process by which learning takes place. (4) Observation of an isolated fragment of the personality versus a consideration of the individual as a whole in his environmental setting.

Strayer, G. D., Coxe, W. W., and Others. *Needed Educational Research in New York State and Research Studies Recently Completed*. Albany, New York: State Education Department, 1935. Pp. 72.

Wheeler, R. H. "Problems of Educational Reconstruction: I. The Issue," *Educational Administration and Supervision*, XXI (January, 1935), 32-44.

Whipple, G. M. "Needed Investigations in the Field of the Textbook," *Elementary School Journal*, XXXV (April, 1935), 575-82.

Committee for Research in Education. "Research in Educational Psychology Planned and in Progress During 1934-35," *British Journal of Psychology, General Section*, XXV (April, 1935), 504-9.

"Looking Forward in American Secondary Education," *School Review*, XLIII (February, 1935), 82-86. Urges investigation of: (1) the abilities, interests, activities, and opportunities of youth from twelve years of age upward; (2) optimum size of the secondary school; (3) improvement of instructional programs in small high schools; (4) improvement of the curriculum; (5) utilization of community resources on a co-operative basis for educational purposes; (6) determination of how well school officers and teachers can be trained to give guidance to pupils; (7) articulation of the senior high school and junior college; and (8) a new basis of standards for secondary schools.

III. Sources of Information: Bibliographies, Summaries, and Abstracts

Abel, J. F. "Selected References on Foreign Education, *Elementary School Journal*, XXXV (June, 1935), 776-87.

Achepohl, Doris Wiley. "A Study of the Terminology Used for Professional Library Literature, with a Suggested List of Subject Headings." Unpublished Master's thesis, University of Illinois, 1932.

Affleck, G. B. "Bibliography for 1933 (Physical Education)," *Research Quarterly of the American Physical Education Association*, V (December, 1934), 127-50.

Aikin, W. M. "The Purposes of the Eight-Year Experimental Study," *Educational Record*, XVI (January, 1935), 107-20. Describes the experi-

ment of the Commission on the Relation of School and College of the Progressive Education Association, seeking to free a selected group of secondary schools to prepare for college without the customary restrictions.

Allen, C. N. "Recent Research on Sex Differences," *Psychological Bulletin*, XXXII (May, 1935), 343-54. Covers 121 references.

Baker, H. J., and Others. "Psychological Tests," *Review of Educational Research*, V (June, 1935), 185-331. Covers 1033 references.

Barr, A. S., and Douglas, Lois. "The Pre-Training Selection of Teachers," *Journal of Educational Research*, XXVIII (October, 1934), 92-117. Evaluation of the literature in this field, including a bibliography of 172 references.

Bergman, Stanley O. "An Analysis of Social Science Theses Written in the College of Education." Unpublished Master's thesis, State University of Iowa, 1933.

Brewton, J. E. *The Functions of the State Education Association Journals*. Peabody Contributions to Education, No. 125. Nashville, Tennessee: George Peabody College for Teachers, 1934.

Brown, Walker, and Compton, Ray. "A Bibliography of Materials Relating to Unified Types of Learning," *California Journal of Secondary Education*, X (April, 1935), 296-98.

Brueckner, L. J. "Selected References on Elementary School Instruction," *Elementary School Journal*, XXXV (September, 1934), 57-66.

Buckner, C. A. *Annotations of Theses and Dissertations in Education, University of Pittsburgh School of Education*. Pittsburgh: Xi Chapter of Phi Delta Kappa, March, 1934. Pp. 56.

Burri, Clara. "The Present Status of the Problem of Individual Differences in Alternating Activities," *Psychological Bulletin*, XXXII (February, 1935), 113-39. Covers 25 references.

Caldwell, O. W. "Work of the Committee on the Place of Science in Education," *School and Society*, XL (November 24, 1934), 673-79.

Carr, Margaret J. S. *Accredited Secondary Schools in the United States*. Office of Education Bulletin No. 17, 1934. Washington: Office of Education, 1934. Pp. vi + 128.

Carrothers, G. E. "Survey of Secondary Education," *School and Society*, XLI (May 4, 1935), 607-10. A questionnaire canvass of the extent to which the survey has been used in Michigan indicates the need for wider use of the monographs.

Champneys, Mary C. *An English Bibliography of Examinations (1900-1932)*. International Institute Examinations Inquiry. London: Macmillan and Co., Ltd., 1934. Pp. xxiv + 140.

Copeland, J. I. "Periodical Checklist for a Teachers College Library," *Peabody Journal of Education*, XII (July, 1934), 37-47, 49.

Cornelinson, Signe. "Content of State Educational Journals, 1929-30 and 1930-31." Unpublished Master's thesis, University of Chicago, 1932.

Crawford, J. R., and Kirkpatrick, J. E. *Research Studies in Educational Measurements*, I. University of Iowa Studies in Education, Vol. IX, No. 4. Iowa City, Iowa: University of Iowa, 1934. Pp. 68.

Davis, E. W. "Aids to Occupational Research: A Guide to Source Materials," *Occupations*, XIII (1934), 503-13.

Derring, Clara E. "Lists and Abstracts of Masters' and Doctors' Dissertations in Education," *Teachers College Record*, XXXIV (March, 1933), 490-502.

Downs, S. W. "Educational Research and Experimentation in Canton, China," *School and Society*, XL (September 29, 1934), 423-25.

Eby, Frederick, and Frost, S. E. *Titles of Graduate Theses and Dissertations Written in the Field of Education at Six Leading Educational Institutions in Texas.* Austin, Texas: University of Texas, 1934.

Eells, W. C. "Status of the Junior College in the United States, 1934-35," *School and Society*, XLI (February 9, 1935), 204-7.

Elsbree, R. H. "Pre-Training Selection of Teachers During 1933," *Educational Administration and Supervision*, XX (September, 1934), 448-53. Reviews 24 studies in this field.

Elsbree, R. H., and Anderson, E. W. "Investigations of the Teacher Supply and Demand Reported in 1934," *Educational Research Bulletin*, XIV (March 13, 1935), 61-66. Includes 22 references.

Evenden, E. S. *Summary and Interpretation.* National Survey of the Education of Teachers, Vol. VI. Washington: Office of Education, 1935. Pp. 253.

Freeman, F. N., and Buswell, G. T. "Selected References on Educational Psychology," *School Review*, XLIII (May, 1935), 379-86.

Gates, A. I., and Others. "Special Methods and Psychology of the Elementary-School Subjects," *Review of Educational Research*, V (February, 1935), 1-120. Covers 776 references.

Gilbert, L. C. "Professional Reading of Young Students of Education," *School Review*, XL (October, 1932), 606-12.

Good, Carter V. "Know Your Educational Literature," *Journal of Educational Research*, XXVIII (October, 1934), 144-46.

Good, Carter V. "Selected Bibliography on Techniques of Educational Research and Related Problems, 1933-1934," *Journal of Educational Research*, XXVIII (September, 1934), 69-80.

Good, Carter V. "Selected Bibliography on Workbooks," *Curriculum Journal*, VI (April 22, 1935), 45-49.

Goodenough, Florence L. "Selected References on Preschool and Parental Education," *Elementary School Journal*, XXXV (March, 1935), 540-48.

Gray, Ruth A. *Bibliography of Research Studies in Education, 1932-33.* Office of Education Bulletin No. 7, 1934. Washington: Office of Education, 1934. Pp. xiv + 350.

Gray, Ruth A. *Doctors' Theses in Education:* A List of 797 Theses Deposited with the Office of Education and Available for Loan. Pamphlet No. 60. Washington: Office of Education, 1935. Pp. 70.

Gray, W. S. "Selected References on Teacher Education," *Elementary School Journal*, XXXV (December, 1934), 298-306.

Gray, W. S. "Summary of Reading Investigations (July 1, 1933, to June 30, 1934)," *Journal of Educational Research*, XXVIII (February, 1935), 401-24.

Greene, H. W. "The Education of Negro Leaders," *School and Society*, XLII (July 27, 1935), 134-36. Based on biographical directories of national scope.

Harap, Henry, and Others. "Bibliography on Curriculum Making, March, 1933, to March, 1934," *Society for Curriculum Study News Bulletin*, V (October 24, 1934), 11-37. Includes 246 items.

Harris, Mabel. "Non-Professional Library Instruction in Teachers Colleges," *Peabody Journal of Education*, XII (September, 1934), 86-95.

Herriott, M. E., and Others. "Textbooks of 1934," *Society for Curriculum Study News Bulletin*, VI (January 15, 1935), 9-46. Includes elementary, high school, and junior college textbooks.

Heston, F. M. "A Survey of College Surveys." Doctor's thesis, Teachers College, Columbia University, 1933.

Hildreth, Gertrude, and Martens, Elise H. "Selected References from the Literature on Exceptional Children," *Elementary School Journal*, XXXV (May, 1935), 694-706.

Hitzelberg, John A. "An Analysis and Evaluation of the Findings of Educational Research and the Recommendations of Educational Administrators and Philosophers Regarding an Economical and Efficient Length of the Recitation Period in Senior High School." Unpublished Master's thesis, New York University, 1933.

Horsch, A. C., and Davis, R. A. "Mental Hygiene and Personality Tests," *American Journal of Sociology*, XL (March, 1935), 646-58. Reviews 81 studies.

Hutson, P. W. "Selected References on Guidance," *School Review*, XLII (September, 1934), 540-46.

Hurt, H. W. *The 1933 College Blue Book*. Hollywood-by-the-Sea, Florida: College Blue Book, 1933. Pp. 588.

Irwin, F. W. "Psychophysical Measurement Methods," *Psychological Bulletin*, XXXII (February, 1935), 140-71. Covers 182 references.

Jones, Vernon, and Brown, R. H. "Educational Tests," *Psychological Bulletin*, XXXI (July, 1934), 476-500. Covers 176 references appearing during 1933.

Kefauver, G. N., and Armstrong, Earl. "Selected References on the Organization of Secondary Education," *School Review*, XLII (October, 1934), 621-26.

Kefauver, G. N., and Armstrong, Earl. "Selected References on the Administration of Secondary Education," *School Review*, XLII (November, 1934), 701-706.

Kelly, R. L., and Anderson, Ruth E. *Christian Education Handbook for 1934*. New York: Christian Education, 1934.

Koos, L. V., and Others. "Selected References on Secondary School Instruction," *School Review*, XLIII (January, February, March, 1935), 60-67, 132-47, 209-28.

Kunkel, B. W. "The Distribution of College Teachers," *School and Society*, XLI (March 23, 1935), 405-408.

Larkin, Arthur Edward. "The Historical Development of the Current Indexing of Published Educational Information." Unpublished Master's thesis, University of Notre Dame, 1932.

Lyle, G. R. "A Regional Loan System," *Journal of Higher Education*, V (December, 1934), 475-77. Describes a cooperative plan of lending journals and expensive books for libraries.

Lyle, G. R. *Classified List of Periodicals for the College Library*. Boston: F. W. Faxon Co., 1934. Pp. xviii + 102.

McSwain, E. T., and Alexander, Carter. "Guide to the Literature on Elementary Education," *Elementary School Journal*, XXXV (June, 1935), 747-59.

Markey, Frances V. "Imagination," *Psychological Bulletin*, XXXII (March, 1935), 212-36. Includes 99 references.

McLaughlin, Katherine L. "Selected References on Kindergarten-Primary Education," *Elementary School Journal*, XXXV (April, 1935), 620-26.

Mead, A. R., and Orr, M. L. "Second Annotated List of Manuals for Observation, Participation and Student Teaching," *Educational Administra-*

tion and Supervision, XX (December, 1934), 659-70.

Monroe, W. S., and Others. "Psychology and Methods in the High School and College," *Review of Educational Research*, IV (December, 1934), 445-564. Includes 645 references.

Mossman, Lois C. "Some References on the Activity Movement," *Progressive Education*, XI (October, 1934), 378-80.

Murchison, Carl, and Others. *A Handbook of Social Psychology*. Worcester, Mass.: Clark University Press, 1935. Pp. xii + 1190.

Peters, C. C. *Abstracts of Studies in Education at the Pennsylvania State College*, Part V. Penn State Studies in Education, No. 12. State College, Penna.: School of Education, Penn State College, 1935. Pp. 56.

Peterson, Joseph. "Aspects of Learning," *Psychological Review*, XLII (January, 1935), 1-27. Bibliography of 103 references included.

Ratcliffe, Ella B. *Accredited Higher Institutions, 1934*. Office of Education Bulletin No. 16, 1934. Washington: Office of Education, 1934. Pp. vi + 176.

Reavis, W. C., and Henry, N. B. "Selected References on Public School Administration," *Elementary School Journal*, XXV (January, February, 1935), 383-87, 462-66.

Reavis, W. C., and Others. "School Organization," *Review of Educational Research*, IV (October, 1934), 353-444. Includes 307 bibliographical references.

Reilman, Aletha B. "A Classified List of Current Periodicals in the Fields of Athletics, Health, Physical Education, and Sports Published in the United States and Canada," *Research Quarterly of the American Physical Education Association*, VI (March, 1935), 63-74.

Remmers, H. H. *A Ten-Year Review of Studies in Higher Education [at Purdue]*. Lafayette, Indiana: Purdue University, 1934. Pp. 92.

Russell, J. D. "Selected References on Higher Education," *School Review*, XLII (December, 1934), 780-86.

Seliger, Leonard. "A Critical Study of the Literature Dealing with the Variability of Intelligence Test Scores from Ages 1-14." Unpublished Master's thesis, College of the City of New York, 1933.

Simpson, A. D., and Others. "Finance and Business Administration," *Review of Educational Research*, V (April, 1935), 121-84. Includes 315 references.

Smith, H. L., and Noffsinger, F. R. *Bibliography of School Buildings, Grounds, and Equipment*, Part IV. Bulletin of the School of Education, Indiana University, Vol. XI, No. 2. Bloomington, Indiana: Indiana University, March, 1935. Pp. 216.

Stoddard, G. D., and Wellman, Beth L. *Child Psychology*. New York: Macmillan Co., 1934. Pp. xii + 420. Reviews the literature in this field.

Strang, Ruth. *Personal Development and Guidance in College and Secondary Schools*. New York: Harper and Bros., 1934. Pp. vi + 342. A summary of investigations in this field.

Swineford, Frances, and Holzinger, K. J. "Selected References on Statistics and the Theory of Test Construction," *School Review*, XLIII (June, 1935), 462-67.

Terry, P. W. "Selected References on the Extra-Curriculum," *School Review*, XLIII (April, 1935), 300-306.

Thomas, M. H., Compiler. *Bibliography of Nicholas Murray Butler, 1872-1932*.

New York: Columbia University Press, 1934. Pp. 438.

Touton, F. C. "Theses Written in California Universities in Candidacy for Graduate Degrees in Education During the Academic Year, 1933-34," *California Journal of Secondary Education*, X (October, 1934), 58-67.

Trotier, Arnold Herman. "Contemporary Educational Literature, Its Place in the Dewey Decimal Classification." Unpublished Master's thesis, University of Illinois, 1932.

Vought, Sabra W. "The Library of the Federal Office of Education," *Peabody Journal of Education*, XII (July, 1934), 21-25.

Walters, Raymond. "Statistics of Registration in American Universities and Colleges, 1934," *School and Society*, XL (December 15, 1934), 785-801.

Watson, Goodwin. "Psychology in Germany and Austria," *Psychological Bulletin*, XXXI (December, 1934), 755-76. Lists important recent studies and psychological papers in Europe.

Webb, H. A. "The High School Science Library for 1933-34," *Peabody Journal of Education*, XII (September, 1934), 57-68.

Williams, D. C. "Scientific Method and the Existence of Consciousness," *Psychological Review*, XLI (September, 1934), 461-79. Includes 51 references.

Witmer, Eleanor M., and Feagley, Ethel M. *A Beginner's Guide to Bibliography with Examples Drawn from the Field of Education*. New York: Teachers College Library, Columbia University, 1935 (revised). Pp. 32.

Woodring, Maxie N., and Fleming, Cecile W. "A Third Bibliography on Study," *Teachers College Record*, XXXVI (February, 1935), 397-408.

Wright, Edith A. "Education for Leisure: Recent References," *Educational Method*, XIV (March, 1935), 335-37.

Young, Grace P. "Bibliography of Modern Foreign Language Methodology for 1934," *Modern Language Journal*, XIX (May, 1935), 616-23.

"Abstracts of Unpublished Masters' Theses, Indiana State Teachers College, 1933 and 1934," *Teachers College Journal*, V (July, 1934, Section 1), 217-69.

"Abstracts of Unpublished Masters' Theses, Indiana State Teachers College, 1934 and 1935," *Teachers College Journal*, VI (July, 1935), 181-96.

Annotated Bibliography on Adult Education. Compiled by W. M. Proctor. New York: American Association for Adult Education, 1935. Pp. 124.

"Creating Social Intelligence: A Descriptive Bibliography," *Research Bulletin of the National Education Association*, XIII (May, 1935), 71-159.

"Educational Books of 1934," *School and Society*, XLI (March 30, 1935), 432-48.

Bibliography of Studies of the Home Economics Curriculum, 1926-1934. Vocational Education Bulletin No. 179. Washington: Office of Education, 1934. Pp. vi + 70.

Doctoral Theses in Education, I, II. University of Iowa Studies in Education, Vol. IX, Nos. 1, 3. Iowa City, Iowa: University of Iowa, 1934. Pp. 206, 122.

Educational Directory, 1935. Office of Education Bulletin No. 1, 1935, Parts I-IV. Washington: Office of Education, 1934.

Selected Bibliography for Homemaking Instruction in Secondary Schools. Department of Education Bulletin No. 1. Sacramento, California: State Department of Education, 1935. Pp. viii + 22.

"Selected References on Elementary School Instruction," *Elementary*

School Journal, XXXV (October, 1934), 131-46.

"Sixty Educational Books of 1934," *Journal of the National Education Association*, XXIV (April, 1935), 127-30.

"Students Dissertations in Sociology," *American Journal of Sociology*, XLI (July, 1935), 67-100.

Teachers College Studies in Education and Psychology (Abstracts). Temple University Bulletin, Vol. I. Philadelphia: Temple University (Graduate Division of Teachers College in Coöperation with Alpha Eta Chapter of Phi Delta Kappa), 1934. Pp. 64.

IV. Collecting, Analyzing, Interpreting, and Reporting Data

Bain, Read. "Measurement in Sociology," *American Journal of Sociology*, XL (January, 1935), 481-88.

Barrow, Edwin Leslie. "The Questionnaire in Education." Unpublished Master's thesis, University of Colorado, 1933.

Boucher, C. S. "The Measurement Business," *Journal of Higher Education*, V (December, 1934), 465-74. Describes the comprehensive examinations at the University of Chicago.

Brueckner, L. J., and Others. *Educational Diagnosis.* Thirty-fourth Yearbook of the National Society for the Study of Education. Bloomington, Illinois: Public School Publishing Co., 1935. Pp. x + 564.

Charters, W. W. "Institutional Research," *Journal of Higher Education*, VI (May, 1935), 281-82. Urges investigation of the processes, techniques, and programs of the college as of equal importance with research in academic fields.

Davis, H. H. "Research and Survey Technics," in "Finance and Business Administration," *Review of Educational Research*, V (April, 1935), 139-40.

Davis, R. A., and Barrow, E. L. "A Critical Study of the Questionnaire in Education," *Educational Administration and Supervision*, XXI (February, 1935), 137-44.

Demiashkevich, Michael. *An Introduction to the Philosophy of Education.* New York: American Book Co., 1935. Chapter I deals with the science and the philosophy of education.

Dewey, J. C. "The Validity of Standardized Spelling Scales," *Elementary School Journal*, XXXV (May, 1935), 675-81.

Douglass, H. R. "The Effects of State and National Testing on the Secondary School," *School Review*, XLII (September, 1934), 497-509.

Eaton, G. G. "Validating Methods of Educational Research." Unpublished Master's thesis, University of Colorado, 1933.

Good, Carter V., Barr, A. S., and Scates, D. E. *The Methodology of Educational Research.* Ann Arbor, Michigan: Edwards Bros., 1935 (Experimental Edition). Pp. xii + 303.

Johnson, G. L. "A Problem in the Study of a Technical Vocabulary in Educational Psychology." Unpublished Master's thesis, Ohio State University, 1933.

Kramer, Edna E. *A First Course in Educational Statistics.* New York: John Wiley and Sons, 1935. Pp. x + 212.

Lincoln, E. A., and Workman, L. L. *Testing and the Uses of Test Results.* New York: Macmillan Co., 1935. Pp. xii + 318.

McGregor, Douglas. "Scientific Measure-

ment and Psychology," *Psychological Review*, XLII (May, 1935), 246-66.

Monroe, W. S. "Hazards in the Measurement of Achievement," *School and Society*, XLI (January 12, 1935), 48-52.

Musser, Belle M. "Terminology in Educational Psychology." Unpublished Master's thesis, University of Colorado, 1933.

Peters, C. C., and Van Voorhis, W. R. *Statistical Procedures and Their Mathematical Bases*. State College, Penna.: School of Education, Penn State College, 1935. Pp. viii + 364.

Reinmuth, O. W. "Greek Contributions to the Terminology of Psychology," *Psychological Review*, XLI (September, 1934), 412-23.

Smoke, K. L. "The Experimental Approach to Concept Learning" *Psychological Review*, XLII (May, 1935), 274-79.

Symonds, P. M. *Psychological Diagnosis in Social Adjustment*. New York: American Book Co., 1934. Pp. 362.

Tyler, R. W. *Constructing Achievement Tests*. Columbus, Ohio: Ohio State University, 1934. Pp. 102.

Warren, H. C., Editor. *Dictionary of Psychology*. Boston: Houghton Mifflin Co., 1934. Definitions of 10,000 terms used in psychological literature.

Young, Pauline V. *Interviewing in Social Work: A Sociological Analysis*. New York: McGraw-Hill Book Co., 1935. Pp. xvi + 416.

V. Training and Guidance of Research Workers and Graduate Students

Barr, A. S. "Coöperative Research," *Journal of Educational Research*, XXVIII (January, 1935), 362-64.

Brandenburg, G. C., and Trimble, O. C. "What the Public School Administrator Thinks of Professional Training in Education," *School and Society*, XL (December 22, 1934), 850-56.

Burke, A. J. "Professional Courses for Secondary School Principals," *Educational Administration and Supervision*, XX (October, 1934), 506-12.

Buswell, G. T. "After Science—What?" *Phi Delta Kappan*, XVII (February, 1935), 114-15. Emphasizes that fundamental research in education requires time, but provides a much more substantial basis for determining educational procedure than do speculation and authority; deplores the decreasing emphasis on research in some graduate schools of education.

Carrothers, G. E. "The Secondary School as a Career for the Doctor of Philosophy," *North Central Association Quarterly*, IX (April, 1935), 424-32.

Conger, N. *A Study of the Contents of Professional Courses in Education in Institutions of Higher Learning in Oklahoma*. Bulletin No. 133. Oklahoma City, Oklahoma: State Department of Education, 1933. Pp. 70. An attempt to secure standardization of course, titles, and content.

Durost, W. N. "The Missing Link in Educational Research," *Progressive Education*, XII (January, 1935), 33-38. Proposes a plan for coördination between the research needs of public schools and the technical skill available in universities.

Eells, W. C., and Cleveland, A. C. "Faculty Inbreeding," *Journal of Higher Education*, VI (May, 1935), 261-68. Covers 17,000 faculty members in 212 American colleges and universities.

Eells, W. C., and Cleveland, A. C. "The Effects of Inbreeding," *Journal of Higher Education*, VI (June, 1935),

227-28. Indicates that inbreeding is accompanied by lessened academic productivity.

Gee, Wilson. *Social Science Research Organization in American Universities and Colleges.* New York: D. Appleton-Century Co., 1934. Pp. x + 276.

Greene, H. W. "The Present Status of Negro Doctorates," *School and Society*, XL (September 22, 1934), 388-89.

Hill, C. M. "Progressive Procedures in Graduate Study," *Progressive Education*, XII (May, 1935), 352-57. Describes the Yale plan of graduate study.

Howerth, I. W. "Popular Indifference to Science"? *Phi Delta Kappan*, XVII (April, 1935), 191-96.

Hull, Callie, and West, C. J. "The Eleventh Census of Graduate Research Students in Chemistry and Chemical Engineering, 1934," *Journal of Chemical Education*, XII (July, 1935), 339-43.

John, W. C. *Graduate Study in Universities and Colleges in the United States.* Office of Education Bulletin No. 20, 1934. Washington: Office of Education, 1935. Pp. xiv + 234. Discusses standards and practices, objectives, articulation, and requirements for graduate degrees.

Kefauver, G. N. "A Challenge to Educational Leadership," *Phi Delta Kappan*, XVII (April, 1935), 177-80.

Mort, P. R. "Organization for Effective Educational Research in Colleges and Universities," *Teachers College Record*, XXXVI (April, 1935), 541-58.

Palfrey, T. R. "The Master's Degree in Modern Foreign Languages," *Modern Language Journal*, XIX (April, 1935), 489-500.

Pechstein, L. A., and Others. "The Cincinnati Seminar Plan," *School and Society*, XLI (June 1, 1935), 736-39.

Russell, F. W. "Report of the Dean of Teachers College for the Year Ending June 30, 1934," *Teachers College Record*, XXXVI (December, 1934), 181-206. Includes a description of a new Doctor's program at Columbia, culminating in the Ed. D. degree.

Smith, D. E. "Necessary Steps in the Solution of Certain Problems in American Schools of Education," *Teachers College Record*, XXXVI (April, 1935), 566-92.

Stoddard, G. D. "The Lag Between Practice and Research," *Phi Delta Kappan*, XVII (April, 1935), 180-82.

Trimble, O. C. *The Final Oral Examination:* Its Limitations and Its Possible Improvement as a Major Academic Hurdle in the Graduate School. Studies in Higher Education, XXV. Lafayette, Indiana: Purdue University, 1934. Pp. 38.

Voelker, P. F., and Others. "A Program of Demonstration and Research," *Educational Record*, XVI (April, 1935), 207-16. Presents a plan for demonstration and experimentation in education throughout the State of Michigan.

Wetzel, W. A., and Ashbaugh, E. J. "The Work of the National Committee on Research in Secondary Education," *School and Society*, XLI (April 27, 1935), 580-82.

Wood, W. E. *A Study of Performance on the Graduate Level Based upon Subject Marks and Intelligence Test Scores:* Ages 20 to 60. Danville, Indiana: Published by the author, 1931. Pp. 56.

Woody, Clifford. "The Master's Thesis," *University of Michigan School of Education Bulletin*, VI (October, 1934), 9-12. Discusses three types of theses based on: review of literature or documentary evidence, collection and analysis of data not previously available, or creative effort.

Works, G. A. "A New Basis for the Accreditment of Higher Institutions," *Educational Record*, XVI (July, 1935), 321-30.